

Home Computing WEEKLY

An Argus Specialist Publication

More software reviews than any other weekly magazine

No. 46
Jan 24-30, 1984

40p

Software reviews for:
Commodore 64,
BBC, VIC-20,
Texas, Dragon,
Spectrum

New micros from Commodore: full details



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Great space games for BBC and Spectrum

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ANDROID TWO

SILVER SOFT 48K SPECTRUM

FREEZ' BEES

PICTURE PUZZLES

FOR THE DRAGON 32

MIKRU-0

RAPADES

Star Trek FOR BBC & SPECTRUM

Software while you wait

Cartridge software at the press of a button will be in the shops next month, bringing cut prices and a halt to piracy.

If successful, it could mean a big shake-up in the way software is now distributed on cassette, cartridge and disc.

Retailers will each have a terminal, based on IBM's Personal Computer, to load blank cartridges with the customer's choice of 400 programs — while he waits.

Each terminal will be linked to a host IBM PC which will download new titles to a hard disc via telephone lines and take care of invoicing and royalty payments.

Continued on page 5

Sinclair in profits talks

Sinclair Research took a total of 400 phoned orders for the new £399 QL micro in the two days after its launch.

The news will interest big City investors, reported to be unhappy about disappointing half-year results.

According to one commentator, these would do well to go above last year's £14m.

They sought reassurance — and this led to a 90-minute breakfast-time meeting behind closed doors last Thursday week.

Continued on page 5

NEW RELEASE



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After sales shock

I write with the intention of making other Commodore users aware of the attitude of that company with regard to after sales service.

In July 1982, after gathering all available information, I purchased a VIC-20 plus cassette deck plus 16K RAMpack from a local supplier, and was completely satisfied in the ensuing months buying a large amount of software and adding a 1515 printer as well.

However, in October 1983, a fault developed in the RAMpack and I took it to the local supplier requesting repair of same. I was astounded when informed that an item which had cost £75 less than 15 months previously, was beyond repair.

Thinking I had probably just been unlucky with my particular supplier, I wrote to Commodore themselves giving a complete history and asking for their advice.

It took a while for them to reply and I was extremely disappointed as in their opinion I should purchase a replacement costing approx. £48 as nothing could be done regarding the original as the guarantee period has elapsed.

They did however mention that they were surprised that a normally durable item should have failed so early in its life.

I have written again to Commodore on this subject but I do not expect a reply, and I therefore ask that you print the essence of my experience with what must now be considered a throw-away product for other unsuspecting users.

I have obtained a replacement 16K RAM to enable the use of VICwriter but, needless to say, it is not from the Commodore stable and cost much less than £48. **F. E. Wilkes, Merthyr Tydfil, Mid Glamorgan**

Julian Taylor, for Commodore, said: "Unfortunately, there's nothing Commodore can do outside the warranty period, because these cartridges can't really be repaired. I must say that though there are exceptions to any rule, very few cartridges have been returned to Commodore as faulty."

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Assistant Editor: Candice Goodwin	Acting Advertisement Manager: Ricky Holloway
Designer: Bryan Pitchford	Assistant Advertisement Manager: Stuart Shield
Managing Editor: Ron Harris	Classified Advertising: Debra Stuppel
Chief Executive: Jim Connell	

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I'm An **URBAN UPSTART** Are You?
RICHARD SHEPHERD SOFTWARE

Two space games with a difference are in this issue. There's a Spectrum listing on page 23 and one for the BBC starting on page 29



More commands for your Commodore 64, including easy-to-use text, sprites and sound. Just type in the listing which starts on page 17



Arcade games, adventures, utilities, educational programs ... they're all reviewed in Home Computing Weekly, the magazine that reviews more software than any other weekly



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While you wait

From front page

The system, called Romox, is being imported by Prism Technology from America, where 500 terminals are already in use.

Managing director Bob Denton said once computer users had bought their first programs, re-loading the cartridges would cost as little as £5 a time.

At first Romox, which has slots for 10 different cartridge types, would offer software for Atari computers and games players, VIC-20, Commodore 64, TI-99/4A and IBM PC. Cartridges for Sinclair's Spectrum and QL and for the new computers using the MSX standard would follow.

The first 20 terminals, to be installed in High Street chain stores, would offer 300 titles, almost all from America.

He said Prism was approaching UK software houses for their titles and planned to have 300 terminals installed by next Christmas.

By then he expected to have done £12m-worth of business with the Romox system.

Customers will be able to browse through a catalogue and see their choice on the terminal before having it loaded onto a cartridge suitable for their machines.

It also means that programs can be rented without fears of copying.

Mr Denton said the advantages of retailers included not having to keep stocks of anything except blank cartridges, technically ECPCs, Edge Connector Programmable Cartridges.

New titles could also be imported and exported via a satellite link free of tax.

Mr Denton said he believed that in future software would be released in the same way as films. First, new titles would go on sale through Romox, followed by cassette, cartridge or disc and then through a system like Micro-net 800, which Prism runs with British Telecom.

Prism has also brought out two robots — with another to follow — which can be controlled via computer keyboard or joystick and made to trundle around and "speak" as well as other functions.

FRED (Friendly Robotic Educational Device), which will cost about £200, stand 12in high and can perform on floor or table top, instructed by a portable infra-red controller, supplied, or computer keyboard or joystick.

It can move at 5ins a second and, using a pen attachment, can be made to copy the screen onto paper.

There is a 45-word vocabulary, expendable, and power comes either from standard batteries or optional rechargeable pack. FRED is due on sale in April

TOPO, controlled in the same way, is over 3ft tall and will cost about £1,500 when it goes on sale next month.

Text is sent from the computer keyboard to TOPO's speech system and, says Prism, it can say virtually anything as well as storing the information.

It can be "taught" to move around, on two independently-driven wheels at 2ft per second, and can then repeat the movements. The on-board battery runs for three hours before recharging.

BOB XA, priced at about the same as TOPO, will be on sale in March-April, offering variations on the TOPO features.

Prism says that software for TOPO and FRED is at present available for the Apple II.

Software for BBC, Commodore 64 and Spectrum was on the way and programs for other popular makes would be worked on this year.

Prism also planned to design its own peripherals, both sensory and manipulative.

Known as Androbots, and imported from America, Prism says the robots can be used in education, for business promotion and for games at home.

They predict future applications will include security and intruder detection, fire and smoke detection, vacuuming and lawn mowing, helping invalids and for control applications.

● Prism is launching a £1,000 portable business computer, called the Wren, which includes four software packages and a built-in auto-dial modem. Designed by Prism and Transam and made by Thorn EMI Data-tech, it has 64K of RAM, 7in amber screen and two 5¼in disc drives.

Prism, 18/29 Mora St, City Rd, London EC1V 8BT



FRED — 12in high and moves at 5in per second



TOPO costs £1,500 and can be "taught" to repeat a series of movements

Sinclair profits



The new QL computer — aimed at businesses and serious users

From front page

About 40 representatives of big City institutions, like pension funds, heard from Sir Clive Sinclair and managing director Nigel Searle shortly before the QL's official launch.

Most of their worries were apparently allayed, but the prospect of Sinclair Research becoming a public company this year is now seen as in doubt.

Supply problems, price cuts by other computer makers and cost increases have led to the fears.

Half-year figures to the end of October showed that the previous year's 65 per cent growth would not be repeated.

Sales went up by 60 per cent, to £37m from £23m, but costs rose by 85 per cent. So pre-tax profits were £4.4m against £3.8m — slightly lower than before after tax.

Optimists among analysts predict full year profits of £14,026,000, perhaps lower.

Sir Clive Sinclair, who still owns most of Sinclair Research, became a paper multi-millionaire last year when a small number of shares were sold at £34 a time, valuing the company at £136m.

The hope is that QL will be produced in sufficient quantity to hit sales targets and that the new pocket-sized TV will together boost growth.

Sinclair Research, Stanhope Rd, Camberley, Surrey

Sorry!

Our apologies for the paper quality of last week's issue — it wasn't our fault! As you can see, we're back to the top quality coated paper you have come to expect from us.

Commodore's new micros: the details

Commodore will soon decide on its next home computers for the UK from a range just previewed in America.

First, reaction from the trade is being assessed.

Theoretically, the choice can be made from six different models, made up of three keyboard styles and two memory sizes, 32K or 64K of RAM. Each has the option of built-in software on ROM.

Two factors narrow the choice..

Commodore's UK marketing director, John Baxter, has already said he does not want a "toy" keyboard. And a 32K model is unlikely in today's market.

So Commodore will probably show two final models at the Hanover show in April, both with 64K of RAM, 60K of which would be useable for BASIC programs.

One will have 67 typewriter style keys, including four programmed and reprogrammable functions keys and four cursor keys. These are arranged in a diamond and shaped as arrows.

The second model will have an additional 19-key numeric keypad to the right and more ROM to handle speech.

In a break with tradition, the new models will not be language-compatible with earlier micros. There will be a new BASIC 3.5, offering more than 75 commands, and the 7501 processor, with .89 to 1.76MHz clock.

This processor is an enhanced version of the 6510, used in the Commodore 64, which in turn was a development from the 6502.

The advantage of the 7501 is that it can handle up to 128K of ROM, but uses the same 6502 instruction set.

One observer who was at the Las Vegas Consumer Electronics Show where the prototypes were previewed said, however, that they did not have the 64's sprite handling or sound features with just two tone generators.

So far, Commodore has said that users will be able to choose one of three built-in ROMs:

- Magic Desk, for home calculations and filing
- Word Processor, with calculation features
- 3-PLUS-1, for "serious" users, which includes spreadsheet, word processor, file manager and graphics

These, and future releases, will also be available on cartridge.

Both computers are charcoal grey. One is 13¼in wide, 2½in high and 7¼in deep and its bigger brother is wider, at 16¼in, because of the numeric keypad, 2½in high and 9¼in deep.

These are the features which both models share:

Screen: 320 by 200 pixels in high resolution — using 10K of RAM — 40 columns by 25 lines text with split screen feature to handle both. Upper and lower case, 128 colours — 16 colours multiplied by eight luminance levels — reverse and flashing, PET graphics characters

Sound: two tone generators or one tone and one white noise generator, and eight levels of volume

Input/output: user port — narrower than the 64's — serial port, ROM cartridge and parallel disc drive port, two joystick ports, cassette interface, RF output, monitor, audio input/output, power supply.

The serial port is compatible with present Commodore products but it is possible that the



Commodore's C264 — with four wide function keys above the keyboard and arrow-shaped cursor keys set in a diamond shape

user port may be omitted for lack of room, according to a Commodore source.

There will be a new-style cassette deck, the 1531, which will have a smaller DIN plug instead of the present edge connector.

And there will also be a new and faster 5¼in single floppy disc drive made in Japan by Newtronics, a company jointly owned by Commodore and Mitsumi. Production is expected to reach 50,000 a month by June. A dual drive follows.

Both models also have a built-in machine code monitor with more than 12 commands.

Apart from the keyboard and slight design changes, the main difference between the two is that the more expensive model has 48K of ROM instead of 32K.

The additional 16K is to handle speech — more than 250 words are included and more can be added with cartridges or discs.

The upper-range model is called the CV364. The last two figures indicate RAM size, the figure 3 denotes the extended keyboard and the V is for the speech capability.

For the same reasons, the other model has the code C264.

If Commodore chose to, it could produce a model C132 which would have a "toy" keyboard and 32K of RAM.

No UK launch date has been decided but, with final models

shown in April, summer is the most likely time for deliveries in bulk.

Among the BASIC commands in the new models, all new to Commodore are:

BOX for graphics
CIRCLE
COLOR
DO WHILE
DO UNTIL
DRAW
ERRS error trapping
GET KEY waits until key pressed
GRAPHIC selects graphics mode
GSHAPE defines graphic
INSTR string handling
JOYstick
KEY defines function key
LOCATE
PAINT
PRINT USING text formatting
PUDEF define format for above
ARC CLEAR
RENUMBER
RESUME data statement handling
RGR
RLUM both graphics commands
SOUND
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What's new at the big Las Vegas show

Our man in America, Bud Izen, reports on what he found at the Consumer Electronics Show

The first and most lasting impression that hits you as you enter is the sheer size of this show. Imagine 20 American football fields (each about 30 yards by 100 yards) filled with the latest electronic gadgets. That is roughly the floor size.

What is even more amazing is that this is a trade show; it is not open to the general public. This year about 80,000 people attended during the four days.

There is virtually no way to see everything. In addition to the floor space at the convention centre itself, the convention areas of three other major hotels were also utilised.

Of primary interest to many were sales figures and forecasts for 1983 and 1984. The Electronic Industries Association keeps careful statistics on virtually every aspect of the industry:

Year total sales to dealers in thousands of units/Factory Sales in \$Millions

Home Computers		
1982	2,000	1,300
1983	4,800	1,950
1984 (proj)	6,800	2,750
Home computer software		
1982	n/a	250
1983	58,000	1,050
1984 (proj)	88,500	2,200
Programmable video games		
1982	8,200	950
1983	6,650	760
1984 (proj)	5,000	450
Video game cartridges		
1982	60,000	1,200
1983	75,000	1,400
1984 (proj)	74,300	1,500
Market Penetration (% of homes) at the end of 1983:		
Programmable video games	21 per cent	
Home computers	7 per cent	

It is amazing to see how much dollar volume is being generated by an industry which has so far only penetrated into seven per cent of all American homes! Home computers and related software are now selling more and generating more dollars than video games machines which have been around longer and are in three times the number of homes. This seems to clearly indicate that lots of people are getting tired of doing nothing but playing games. About time too.

Something else that was about time in coming is a new television program that was just announced at the show. Called The New Tech Times, it will be aired weekly on the Public Broadcasting System, our only form of viewer-sponsored commercial-free TV.

The focus and purpose of the program will be to give consumers a way to handle their

problems with new technology. Viewers will be able to "talk back" to their sets; using a modem and the CompuServe bulletin board system.



• The nicest looking software in the best package

The first item was, of course, the Coleco Adam. I talked to several Coleco reps, who expressed an honesty and optimism that seemed genuine. They obviously really believe in the product and also firmly believe that the problems that occurred when the first run of machines were released has been remedied. They also admitted that the problems (bugs in some of the software, quality control and documentation problems) did exist, which is refreshing coming from an industry that usually consists of nothing other than completely perfect products, even though we all know otherwise. I saw the new documentation, and it does seem simple and clear.

The machines are now rolling off the assembly lines in New York, although they expect demand will exceed supply for a considerable time. So much so that even America's largest retailer, The Sears chain, will be hard pressed to fill orders in less than three months.

Sol Davidson, U.S. general manager of Commodore, said his company was not worried about the Adam in the least. As far as he was concerned, the Commodore booth was (metaphorically

speaking) the only booth at the show. Contrary to rumours, Commodore had no plans to market a competitive package nor to reduce prices merely because of the Adam or any other computer. He felt Commodore was end-user oriented, meaning that they felt highly committed to their users and do not wish to dictate to them.

He objected to the concept of a factory-determined integrated system because it locks out versatility by definition. He said that one of the main characteristics of Commodore machines is that they are unlimited in their potential applications thus allowing end users to completely design their own systems for their own specific purposes.

One of the more versatile and impressive of all the Apple clones will probably be coming your way soon. Called the Laser 3000, it is made by Video Technology, of Hong Kong, and is expected to retail for about \$600 here, and its equivalent in pounds in the U.K. It is about 80-90 per cent compatible with existing Apple software.

The company has not stolen any proprietary routines from Apple, so it will not run any software that makes direct ROM monitor calls.



• Mark Eyles and Carl Ziegler from Quicksilva — nice accents

SPECIAL REPORT

The product itself looks very good, and was on display doing a number of impressive things. It runs at twice the clock speed of the Apple II, can support up to 192K RAM through bank switching, will address twice as many pixels in graphics mode as the Apple (560 by 192), comes with a built-in parallel printer port, includes both 40 and 80 column display, has an 81 key full-stroke keyboard with a nice feel, has a separate numeric keypad, includes eight user-defined function keys, will generate four separate sound channels, will support virtually every Apple add-on or its equivalent as available from Video Technology (modem, data cassette recorder, joysticks, floppy discs, Z80 card, 8088 card, light pen, printer, plotter, and RGB monitor to name but a few).

It will absolutely support every language that the Apple II can, and every major software package that the Apple II can run. I was definitely impressed.

Elan obviously needs no introduction to you; it was certainly getting a very professional introduction to us, although I think they might have made a slight marketing error by using an American voice-over rather than an English one behind their video presentation.

Everyone over here seems to love the foreign expert, and especially ones with British accents.

I did find it odd that Elan was not planning to introduce the machine until next October! It seems strange to debut a machine so early.

Another name that will sound familiar to you is Quicksilver. This was its first CES, and got in on luck; another firm cancelled out. I met Mark Eyles and Carl Ziegler who said they were getting a very warm reception with lots of dealer enquiries.

Of course there were a few bugs, and I did my best to meet one from Learning Software. I cannot tell you much about their products as they do not plan to market in the U.K. However, their bug was very nice.

There were lots of magazines present. Each with a mini-booth. I was especially interested in the software that Playboy brought to demonstrate. Unfortunately, they would not let me take her home for a review.

I would like to close by quoting the president of Atari Sales, Donald Kinsborough, in remarks he made to a conference at the show:

"We must search for meaningful applications of microprocessor technology in the home. We are in the entertainment business and we enhance people's



● A bug from Learning Center

lives by offering opportunities for learning and self improvement.

"In fact, aside from word processing, there are few truly useful applications for home computers. Let's face it: you can balance your cheque book with a calculator and you can store your recipes in a box in the kitchen.

"We've got to make consumers say: 'Gosh, I didn't know a computer could do that' and 'I want one.'

"What I am telling you is that it is not enough for manufacturers to merely offer more computer memory to consumers. Most consumers have more power than they know what to do with already. And it is not enough for retailers to continue to justify the sale of computers on price alone.

"In fact, that is a disservice to consumers because consumers should be made aware of what the computer can do for them. Who are we helping if the consumer buys a cheap computer and winds up using it as an electronic paperweight or doorstop?

"Maybe we can learn something from Detroit. In the old days, car buyers were also preoccupied with horsepower and cubic inches of the engine. But nowadays, most people are

interested in features and gas mileage. We've yet to get that point in our industry."

All those points are well taken. You may or may not agree, depending upon where you are coming from. One thing is for sure, almost half of the all consumers who purchase a computer costing less than \$300 will not be using it less than six months later.

And I for one think that is a real shame. For all of us.

The show was great. Perhaps next year we'll see software wars instead of hardware wars. I hope so.

See you next year at the show, and in my U.S. Scene column.



● Sol Davidson, U.S. General Manager of Commodore, a nice man



● A friendly face — Maggie Burton from Elan

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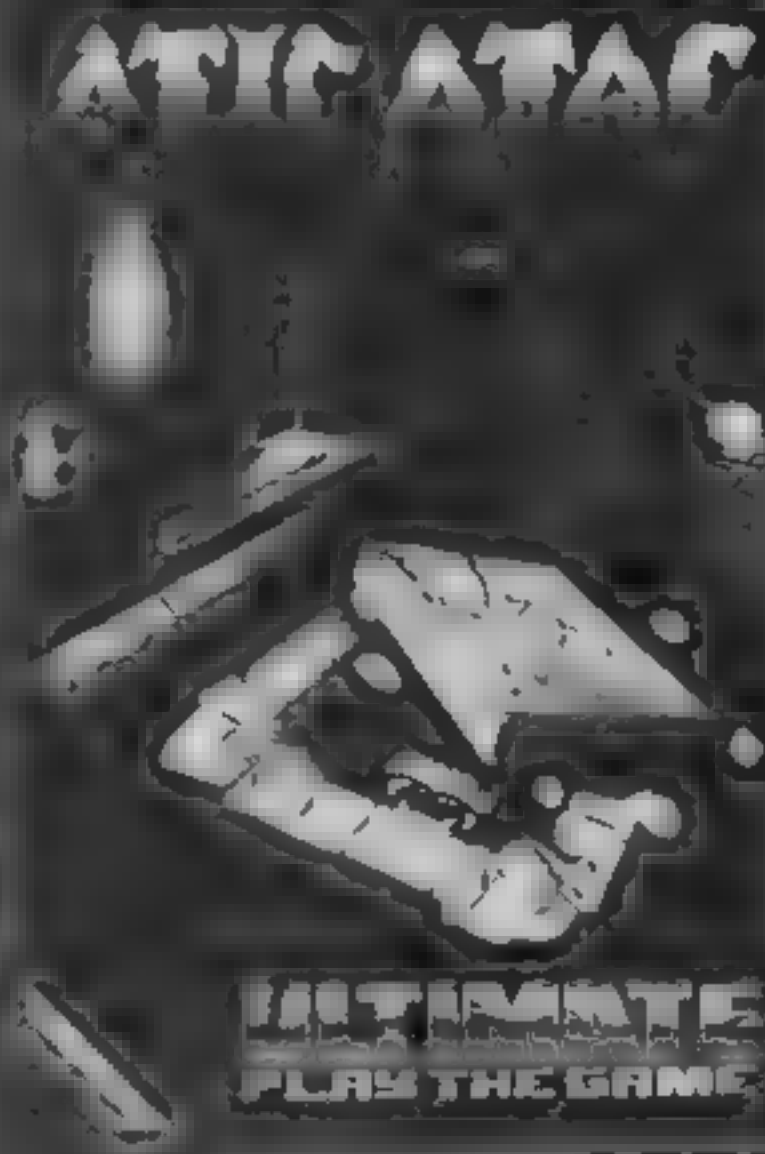
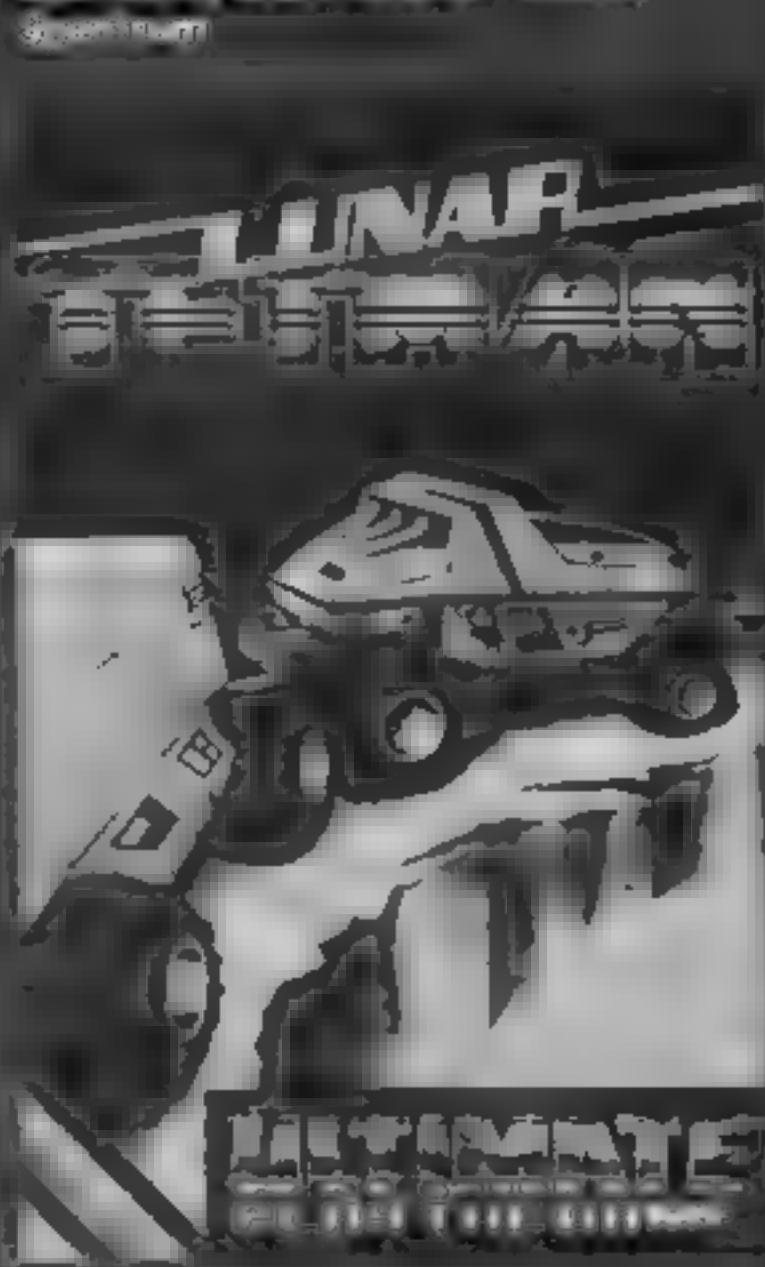
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LUNAR JETMAN - 48K ZX Spectrum



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TRANZ AM - 16/48K ZX Spectrum

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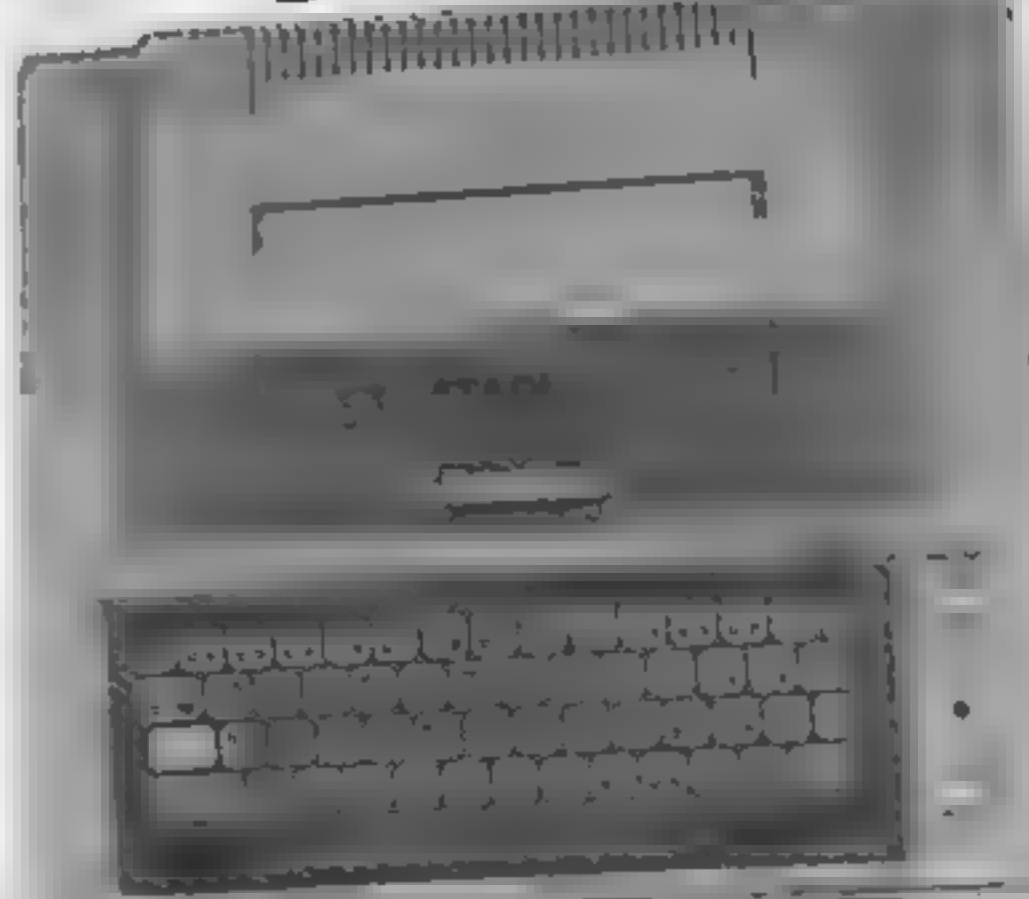
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 VIC 20
 COCKIE

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Dodge fast — it's your only defence

Space Dodger, John Redhead's short game for any Atari, will test your reactions with the joystick. With no weapons, all you can do is hope you can out-run the invaders



The object of Space Dodger is simple — just avoid the hordes of alien spaceships.

You are the commander of an unarmed passenger ship, controlled by a joystick, so there's no chance of blasting them.

You choose your level of difficulty, from 0 to 60.

How it works

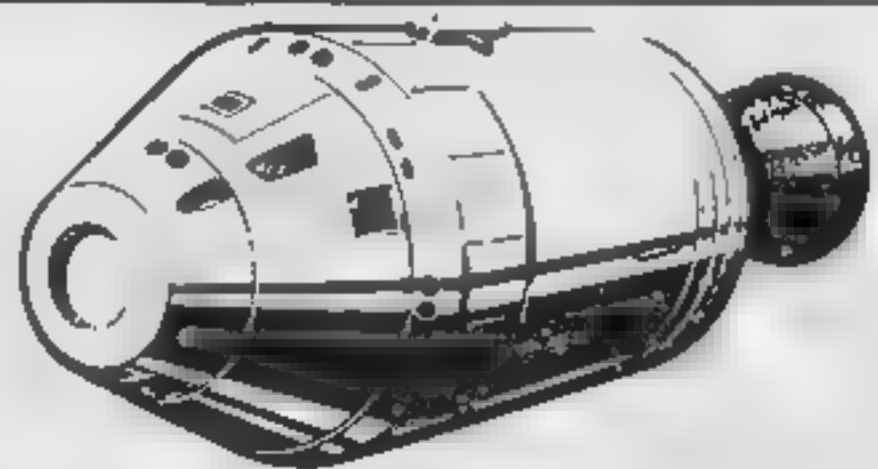
1-9 initialise timer, set screen colour etc, display instructions and score
 10-34 difficulty level, display loop, sound
 100-240 define spaceship, sound
 250-300 main loop checks for spaceship movement, print alien craft, check for crash (280)
 1000-1010 explosion routine
 2000-3110 title, opening tune, DATA

```

1 T=0:GOSUB 2000:SOUND 0,0,0,0:SOUND 1,0
,0,0:SOUND 2,0,0,0
2 POKE 53248,250:RESTORE :POKE 712,0:"
}"
3 POKE 710,0:POKE 53278,0
4 POKE 707,15:POKE 752,1
5 IF Z=1 THEN ? "YOU LASTED ";T;" SPACE
SECONDS":T=0:FOR A=1 TO 800:NEXT A:GOTO
10
6 ? "YOU ARE CRUISING HOME IN YOUR SPACE
SHIP WHEN YOU ENCOUNTER A SWARM OF
ALIEN SHIPS .BEING AN UNARMED"
7 ? "PASSENGER SHIP YOURSELF THE ONLY
COURSE OF ACTION OPEN TO YOU IS TO US
EYOUR JOYSTICK TO KEEP OUT OF"
8 ? "THEIR WAY.GOOD LUCK":Z=1
9 FOR A=1 TO 50:SOUND 0,121,10,5:FOR B=1
TO 90:NEXT B:SOUND 0,0,0,0:NEXT A
10 SOUND 0,255,10,2
11 ? "INPUT DIFFICULTY LEVEL
(0 EASY TO 60 HARD)"
20 INPUT D:IF D<0 OR D>60 THEN ? "":GOT
O 11
30 D=D+20: ? "GET READY .....HERE WE GO"
40 FOR A=1 TO 1000:NEXT A
45 ? "}"
100 I=PEEK(106)-8
110 POKE 54279,I
120 PMBAS=I*256
130 FOR Q=PMBAS+512 TO PMBAS+640
140 POKE Q,0
150 NEXT Q
160 X=100:Y=0
170 POKE 704,90:POKE 559,46:POKE 53277,3
:POKE 53248,X
180 POKE 53248,X
190 FOR Q=0 TO 6
200 READ P
210 POKE PMBAS+512+Y+Q,P
220 NEXT Q
230 DATA 195,231,102,60,24,24,24
240 SOUND 0,0,0,8
250 X=X+6*(STICK(0)=7 AND X<200)-6*(STIC
K(0)=11 AND X>50)
    
```

```

255 T=T+1
260 POKE 53248,X
265 POKE 752,1
266 A=INT(RND(0)*40)
270 POSITION A,23: ? " ^"
280 IF PEEK(53252)=4 THEN GOTO 1000
300 GOTO 250
1000 SOUND 0,80,0,15:SOUND 1,10,0,15:FOR
A=0 TO 255:POKE 710,A:POKE 712,A:NEXT A
1010 SOUND 0,0,0,0:SOUND 1,0,0,0:GOTO 2
2000 GRAPHICS 18:COLOR 1:SETCOLOR 0,8,8:
POSITION 4,5: ? #6;"space dodger":POSITIO
N 4,7: ? #6;"BY.J REDHEAD"
3000 L=30:RESTORE 3000
3002 B=0
3010 READ CH,N,D
3012 IF CH=500 THEN RESTORE 3000:B=B+1:G
OTO 3010
3020 SOUND CH,N,10,10
3030 FOR A=1 TO D*L:NEXT A
3035 IF B=2 THEN RETURN
3040 GOTO 3010
3050 DATA 0,81,0,1,162,0,2,128,4,0,53,4
3060 DATA 1,173,0,2,121,4,0,60,2,0,64,1,
0,72,1
3070 DATA 0,40,0,1,162,0,2,128,4,0,53,4
3080 DATA 1,173,0,2,121,4,0,60,2,0,64,1,
0,72,1
3090 DATA 0,40,0,1,162,0,2,128,4,0,53,4
3100 DATA 1,173,0,2,121,4,0,60,2,0,64,1,
0,60,1
3110 DATA 0,72,0,1,182,0,2,144,8,1,173,0
,2,121,8,500,500,500
    
```



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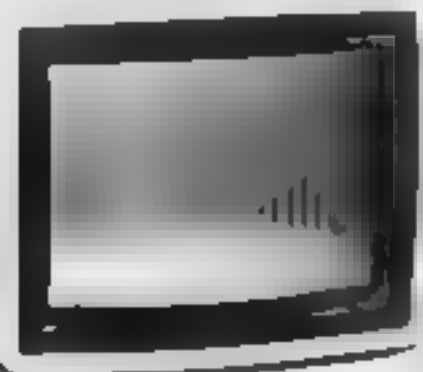
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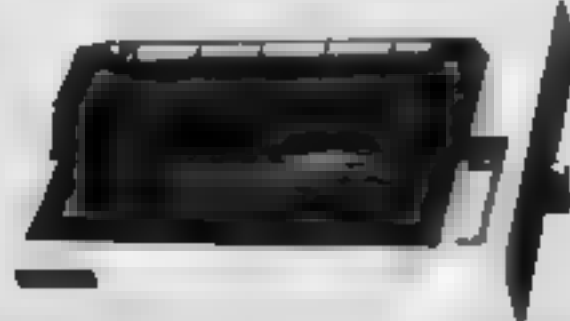
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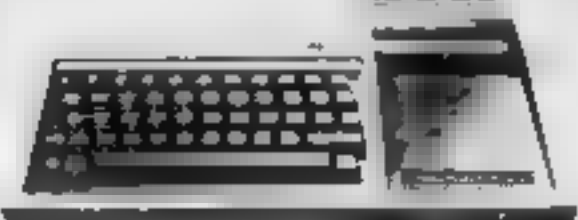
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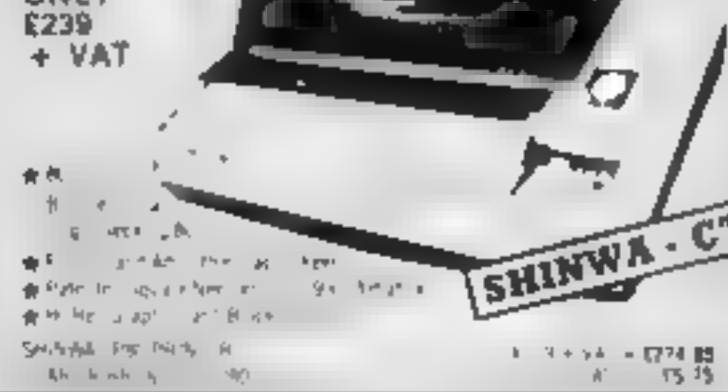
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COMPETITION

Dozens of great games from Abrasco are on offer in this week's spot the difference competition.

Seventy prize packages are waiting to be won by owners of these computers: VIC-20, Spectrum and Commodore 64

That's a total of £1,000-worth of prizes and each winner will get two tapes

And all you have to do is find the differences between our two cartoons

The prizes

Each of our 70 winners will receive two tapes, worth about £14-£15, chosen by Abrasco from its range

VIC-20 owners will get two of the following

Vlaxplode	Fly snatcher
Android Attack	Alien Hunter
Double Trouble	Double Trouble
Meter Mania	Catcha Troopa

Winning Spectrum owners will receive these two games:

Golf	Pool
------	------

And our winners who own Commodore 64s will be sent two tapes from these three

Vlaxplode 64	Golf 64
Supa Catcha Troopa	

The winners' names and the solution will be published in Home Computing Weekly

How to enter

Study the two cartoons — there are a number of differences between them

Circle the differences on cartoon B and then fill in your name, address and the name of one of the three computers for which we are offering prizes: VIC 20, Commodore 64 or Spectrum

70 chances to win great games from

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Enter our Spot the Difference competition and you stand a chance of winning a share of £1,000-worth of Abrasco software. The prizes are for the VIC-20, Commodore 64 and Spectrum

Seal the coupon and cartoon B in an envelope and write clearly on the back of the envelope the number of differences you found

Post your entry to Abrasco competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB

Entries close at first post on February 10

You may enter as many times as you wish but each entry must be on the official coupon — not a copy — and sealed in a separate envelope

The winners will be the first 70 correct entries opened, regardless of prizes chosen



The prizes will arrive from Abrasco within 28 days of the publication of the issue containing the names of the winners

Important: please follow carefully the guidelines on entering — incomplete coupons and entries in envelopes with no number on the back will not be considered

The rules

The first 70 correct entries opened after the closing date, February 10, 1984, will win the prizes. Coupons which are not fully completed and envelopes without the number of differences found on the reverse will be discarded

Entries will not be accepted from employees of Argus Specialist Publications, Abrasco and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies

Abrasco competition

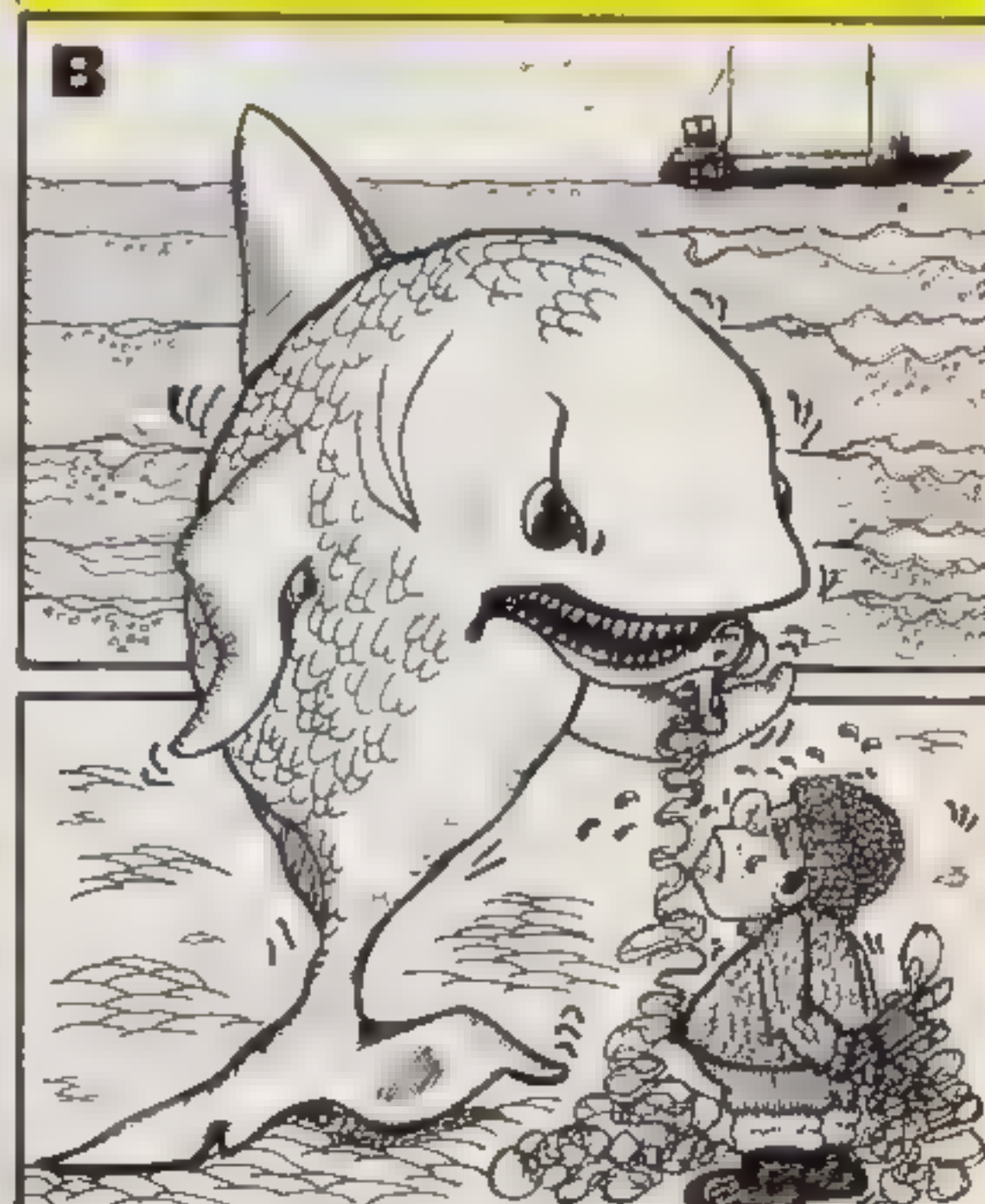
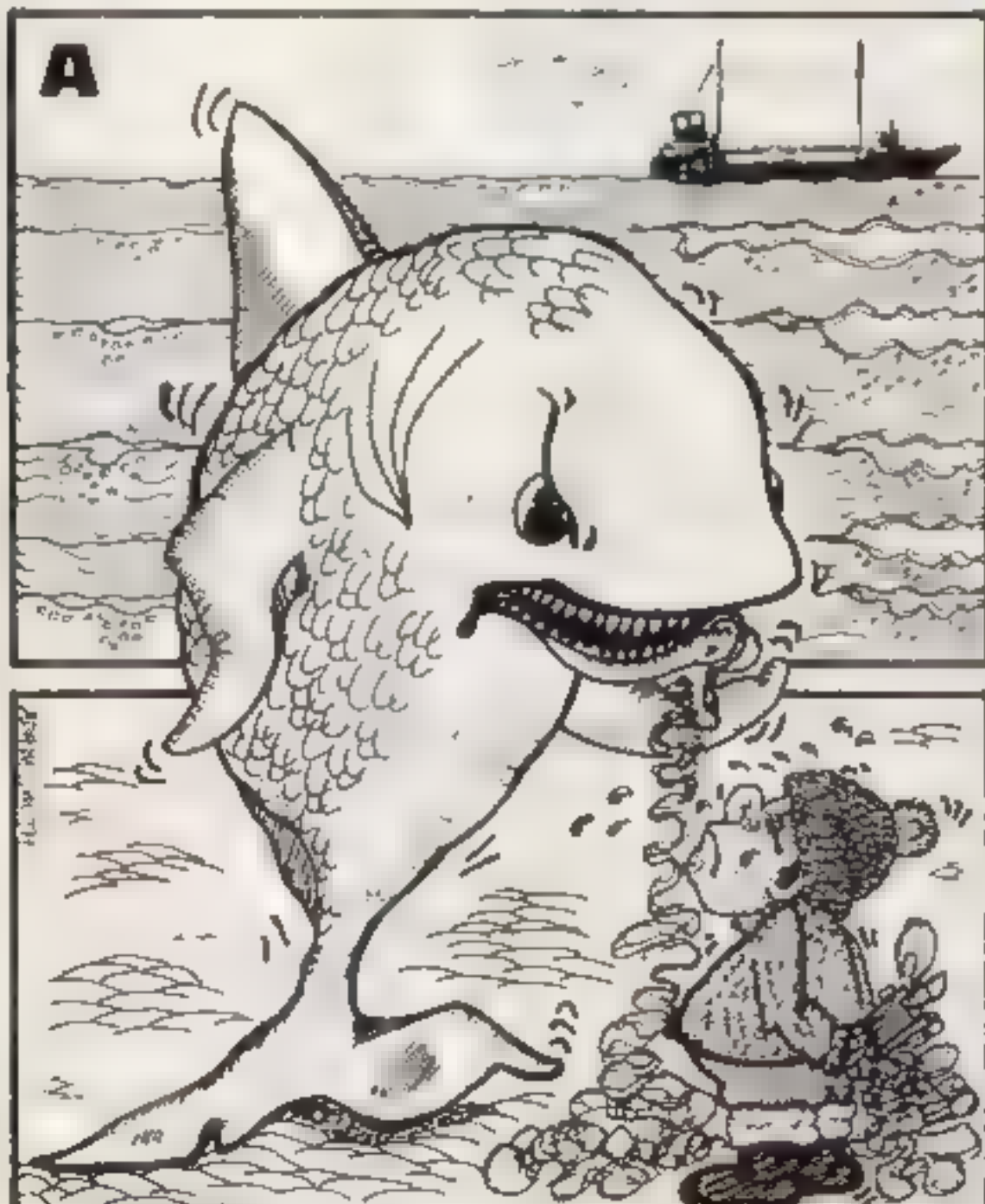
Entry Coupon

Name _____

Address _____

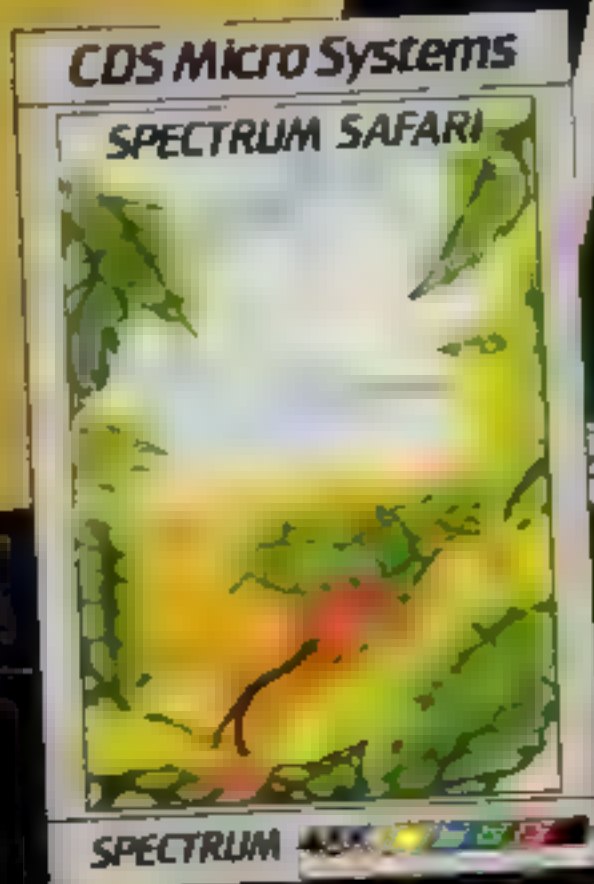
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Number of differences found:



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new... Spectrum
Arcade action

new... Spectrum
Adventure

Extend your 64 to do a lot more

Make text, sprites and sound more flexible with part two of David Rees' Extended BASIC for the Commodore 64. You can use this week's listing even if you missed part one

Just type in this listing for many more commands on your Commodore 64 — all easy to access from BASIC.

To run each command, SYS is still used, but variables are read directly after the command (they must be integer values).

Also, to make the commands easier to recognise, each is given a variable name similar to its own name — be careful not to reset these variables in a program.

Unfortunately, some names have had to be shortened because of their similarity to other commands. As POINT contains INT it is shortened to PO, for example.

As with part one, take care when entering the code and SAVE the program before you use any part of it.

The checksums also act as a rough guide, totalling the code numbers of each section and showing if some are wrong by an incorrect total.

You can then use the demonstration program, showing the versatility of some of the commands.

Although this week's part works on its own, you cannot use POINT, LINE, CLG or MODE clear if you missed last week's issue.

The "manual" which follows is brief, but it does give clear details of every command as well as some more detailed information.

Note: Modes 4 and 5 use the second 16K block of memory, so sprite graphics must be POKEd to 16K and above, and registers normally at 2040 are moved to 25592.

Next week: Advanced demonstration programs, including a Teletext screen and a map of the British Isles.

The Commodore 64

MODE

Allows easy change to graphics modes. The screen will only be cleared if you want it to be.

Format: MODE = 51828
SYSMODE,A,B,C

B: 0 or 1 Which hi-res screen is cleared

C: if C = 1 then that screen is cleared

GCOL

Change graphics colour.

Format: GCOL = 51770
SYSGCOL,A,B

Value A

0,1,2,3 hi-res colour choice (eg on/off or multicolours)

4 text colour

5 border colour

6 background colour

7,8,9 Colours 1,2,3 for ECM and multicolour modes

10,11 Sprite multicolours 1 and 2

12 to 19 individual sprite colours

B: the colour put into these registers (0-15)

POINT

Draws a point in modes 0,1,4,5

Format: PO = 51334
SYSPO,A,X,Y

A is the attribute: each bit performs a separate job.

Bit number	if off	if on
0	Screen 0	Screen 1 drawn to

1 Plot on normal

2 Unplot ExclusiveOR

X,Y plot position (320 by 200 always)

Plot colour is specified by SYSGCOL,(0-3),colour

GMOVE

For use with line, moves plotting position

Format: GMOVE = 52039
SYSGMOVE,X,Y

X,Y is the plot position

LINE

Draws a line from last plotting position in modes 0,4.

Format: LINE = 51754
SYSLINE,A,X,Y

For variable definition see POINT.

TPOINT

Draws a point in text modes 3,6,7 (mode 8 if graphics are defined)

Format: TPO = 51501
SYSTPO,A,X,Y

A (0 or 1) normal or Exclusive

X,Y plot position

Plots in text modes in an 80 x 50 resolution, but for compatibility it uses a 320 x 200 number grid.

CLG

Format: CLG = 52151
SYSCLG,A

Clears graphics screen denoted by A (0 or 1)

GTEXT

Mode 0 and 4

Prints one specified character given by a number (see Commodore Manual, p132 for characters). It may be upper or lower case, graphic or reverse field and single or double height. Both background and foreground colours may be independently defined. It may be combined with hi-res graphics, giving more than full Teletext effects.

Format: GTEXT = 52657
SYSGTEXT,X,Y,A,B,C

X,Y print position on a 40 x 25 grid

A colour, given by background colour + 16 * text colour

B bit 0 gives the screen printed to, bit 1 determines single or double height text.

C Character: 0-255 gives graphics character set, 256-511 gives text character set.

CURSOR

Format: CRSR = 53056
SYSCRSR,X,Y

Similar to TAB(X,Y). Sets printing position of the cursor relative to the top left hand corner of the screen.

SPRITE

Format: SPRITE = 52164
SYSSPRITE,N,X,Y

Changes the position of sprite number N (0-7) to the position X,Y (511,255 max).

SETSPRITE

Format: SETSPRITE = 52248
SYSSETSPRITE,N,A,M,B,C,D,X,Y,P,G

Defines video registers for sprites in the following way:

N sprite number (0-7)
A sprite off/on (0-1)
M normal or multicolour (0-1)
B,C,D defines multicolours 0,1 and 2 for all sprites (range 0-15)
X expand X off/on (0-1)
Y expand Y off/on (0-1)
P foreground/sprite priority (0-1)
G start of sprite graphics (0-255)

MUSIC

Plays a constant musical note of independent volume. To cut the note, use zero volume or POKE the waveform register to zero.

Format: MUSIC = 52453
SYSMUSIC,S,W,V,N,O,D

S sound channel (0-2)
W waveform 16,32,64 or 128

Value

A	Classification	Resolution	Text
0	hi-res screen 0	320 x 200	Teletext
1	hi-res screen 0	160 x 200	N/A
2	extended colour	40 x 25	40 x 25
3	multicolour	80 x 50	N/A
4	hi-res screen 1	320 x 200	Teletext
5	hi-res screen 1	160 x 200	N/A
6	normal graphics	80 x 50	40 x 25
7	normal text	80 x 50	40 x 25
8	user-defined graphics	40 x 25 +	defined

COMMODORE 64 PROGRAMMING

V volume independent of other channels (0-15)
 N note number (0-11) gives C to B (manual p153)
 O octave number (0-7)
 D dummy value used for later expansion

VOL

Sets master volume V (range 0-15).

Format: VOL = 52646
 SYSVOL,V

FX

Performs a few odd useful functions.

Format: FX = 53075
 SYSEX,N,A

N =

0 changes display column number 38/40 (0/1)

1 changes display row number 24/25 (0/1)

2 fine scrolls screen X wards (A=0 7)

3 fine scrolls the screen Y wards (A=0 7)

4 A=0:blank screen; A=1:display

5 sets master volume and filter modes (0-255)

6 sets IRQ speed (i.e. cursor and TI rate) (0-255). Normally 67

7 sets repeat keys. A=0:cursor only;64:no keys; 128: all keys

Plotting rate in pixels per second (command only):

POINT - 300; LINE - 3500,
 TPOINT - 1000

New Memory Map

0 systems variables

Listing 1 — Extended BASIC part two. Use the CHECKSUM to make sure you have typed it in accurately

```

1 REM*****
2 REM*EXTENDED BASIC*
3 REM* PART 2 *
4 REM*BY DAVID FEES *
5 REM*****
6 REM* TEST SPRITES *
7 REM* AND SOUND *
8 REM*****
9 X=51184 C=0
10 FORN=0TO1788:READA POKEX+N,A C=C+A NEXT
15 PRINT"CHECKSUM TOTAL 1="C
16 PRINT"IT SHOULD BE 256770"
20 X=207*256 C=0
30 FORN=0TO226
40 READA POKE(X+N),A C=C+A
50 NEXT
55 PRINT"CHECKSUM TOTAL 2="C
56 PRINT"IT SHOULD BE 256770"
100 DATA173,,221,41,252,24,105,3,24
110 DATA141,,221,32,129,255,162,14,108,,3
120 DATA100,10,96,32,4,200,165,102
125 DATA41,128,201,240,76,240,199
130 DATA165,97,224,,100,144,5,169,1
135 DATA133,253,96,169,,133,253
140 DATA133,252,133,251,165,97,201,
145 DATA208,3,133,251,96,41,127,201,1
150 DATA240,247,201,9,240,37
155 DATA168,169,128,136
160 DATA74,24,136,208,251,133,254
165 DATA169,1,133,20,165,98,37,254
170 DATA201,,240,6,165,251,5,20,133,251
175 DATA6,20,24,6,254,144,235,96
176 DATA169,1,133,252,165,98,10,24
177 DATA165,99,224,,240,3,24,105,1,24
178 DATA133,251,96
180 DATA32,8,200,165,253,240,3
185 DATA76,240,199,165,252,208,249,96
190 DATA32,8,200,165,253,240,3
195 DATA76,240,199,165,251,41,1
197 DATA141,101,3,165,251,41,2,240,2
200 DATA169,1,141,102,3,165,251,41,4
205 DATA240,2,169,1,141,103,3,173,22,207
210 DATA240,18,173,16,207,141,60,3
215 DATA173,17,207,141,61,3,173,18,207
220 DATA141,62,3,173,20,207,141,89,3
    
```

1024 screen and colour for hi-res screen 0

2048 BASIC RAM

8192 hi-res screen 0, continues to 16193

14336 user-defined characters

16384 hi-res screen 1

24576 hi-res screen 1 colour, to 25575

40960 BASIC ROM

49152 Extended BASIC code to 53247

Command Input

SYS to machine code. Location indicated by appropriately named variable (nb. access time is saved by use of only the first 2 letters of this variable). Further values read by separate routine. This will read both variables and numbers, but will not evaluate expressions. Only integer values can be used

Error Calls

"Illegal Quantity" if a value is out of range.
 "Syntax Error" if too many or too few values come after the command, if a comma does not follow the command, or if an expression is used.

```

225 DATA173,21,207,141,90,3,32,8,200
230 DATA165,253,240,1,96,165,251
235 DATA141,64,3,141,93,3,141,17,207
240 DATA165,252,141,63,3,141,92,3
245 DATA141,16,207,32,8,200,165,253
250 DATA208,226
255 DATA165,252,208,222,165,251
260 DATA141,95,3,141,94,3,141,18,207
265 DATA173,19,207,240,13,201,1,240,9
270 DATA201,4,240,5,201,5,240,1,96
275 DATA173,22,207,240,15,160,
280 DATA140,22,207,201,2,240,3,76,107,203
285 DATA76,,76,105,194
290 DATA32,119,200,165,251,41,1
295 DATA141,55,3,173,20,207,141,54,3
300 DATA32,8,200,165,253,240,1,96
305 DATA165,251,24,102,252,106,24
310 DATA102,252,106,24,141,52,3,56
315 DATA233,80,144,2,24,96,32,8,200
320 DATA165,253,240,1,96,165,252,240,1
325 DATA96,165,251,74,24,74,24,141,53,3
330 DATA56,233,50,144,2,24,96
335 DATA173,19,207,201,3,240,13,201,6
    
```

```

340 DATA240,9,201,7,240,5,201,8,240,1
345 DATA24,173,52,3,24,74,24,141,56,3,10
350 DATA24,141,57,3,173,52,3,56
355 DATA237,57,3,24,141,60,3,173,53,3
360 DATA24,74,24,141,58,3,10,24
365 DATA141,59,3,173,53,3,56,237,59,3
370 DATA24,10,24,141,61,3,24,109,60,3
375 DATA24,168,169,1,192,,240,8,24,10
380 DATA24,136,192,,208,248,141,62,3
385 DATA169,4,133,252
390 DATA173,56,3,172,58,3,192,,240,13
395 DATA24,105,40,144,3,24,230,252,136
400 DATA192,,208,243,133,251,160,
405 DATA177,251,217,,207,240,7,200
410 DATA192,16,208,246,160,,152
415 DATA172,55,3,192,,208,6,13,62,3
420 DATA24,144,3,77,62,3,168,185,,207
425 DATA160,,145,251,165,252,24
430 DATA105,212,24,133,252,173,54,3
435 DATA145,251,96
440 DATA169,1,141,22,207,76,134,200
445 DATA169,2,173,22,207,76,134,200
450 DATA32,119,200,165,251,133,2
    
```

COMMODORE 64 PROGRAMMING

```

455 DATA32,119,200,165,251,165,2,56
460 DATA141,21,207,96,24,201,,208,4
465 DATA141,21,207,96,24,201,,208,4
470 DATA142,134,2,96,56,233,1,24
475 DATA133,2,56,233,15,144,2,24,96
480 DATA164,2,165,251,153,32,208,96
485 DATA32,119,200,173,,221,41,252,9,3
490 DATA141,21,173,17,30,41,153
495 DATA141,17,208,173,22,20,41,153
500 DATA141,21,173,169,21,141,24,208
505 DATA165,251,56,233,9,144,4,24
510 DATA76,240,199,165,251,133,2
515 DATA32,8,200,165,251,41,1,141,101,3
520 DATA32,8,200,165,251,41,1,201,
525 DATA240,3,32,215,194,165,2
530 DATA141,19,207,201,,208,14,169,31
535 DATA141,24,208,173,17,20,1,2
540 DATA141,17,208,96,201,1,2,11
545 DATA173,22,208,9,16,141,22,208,24
550 DATA144,227,201,2,208,14,169,21
555 DATA141,24,208,173,17,20,1,2
560 DATA141,17,208,96,201,3,208,14
565 DATA169,21,141,24,208,173,22,208
570 DATA9,16,141,22,208,96,201,4
575 DATA208,24,169,128,141,24,208
580 DATA173,17,208,9,32,141,17,208,96
585 DATA201,5,208,11,173,22,208,9,16
590 DATA141,24,208,14,144,21,201,
600 DATA208,1,96,201,7,208,6,169,23
605 DATA141,24,208,96,169,31,141,24,208
610 DATA96
615 DATA32,8,200,165,253,208,11,234
620 DATA165,252,141,16,207,165,251
625 DATA141,17,207,32,8,200,165,253
630 DATA240,1,96,165,252,208,251
635 DATA165,251,141,18,207,96
640 DATA173,62,3,205,65,3,208,17
645 DATA173,61,3,205,64,3,208,9
650 DATA173,60,3,205,63,3,208,1,96
655 DATA173,62,3,56,233,200,144,11,24
660 DATA173,65,3,56,233,200,144,2,24,96
665 DATA173,61,3,56,233,64,144,11,24
667 DATA173,64,3,56,233,64,144,2,24,96
670 DATA76,112,197
675 DATA32,119,200,165,251,41,1
680 DATA141,101,3,76,215,194
685 DATA32,119,200,165,251,41,7,24,10
690 DATA24,133,2,169,1,133,255,164,251
695 DATA192,,240,6,6,255,24,136,208,250
700 DATA32,8,200,165,253,240,3
705 DATA76,240,199,165,251,164,2
710 DATA165,251,165,251,240,8
715 DATA173,16,208,5,255,24,144,13
720 DATA169,255,56,229,255,24,133,255
725 DATA173,16,208,37,255,141,16,208
730 DATA32,119,200,165,251,164,2
735 DATA153,1,208,96
740 DATA32,119,200,165,251,41,7,133,2
745 DATA169,1,133,255,164,251,192,
750 DATA240,6,6,255,24,136,208,250
755 DATA169,255,56,229,255,24,133,75
760 DATA165,251,119,200,165,251,41,1,201
765 DATA240,8,173,21,208,5,255,24
770 DATA144,5,173,21,208,37,75
775 DATA141,21,208,32,119,200,165,251
780 DATA41,1,201,,240,8,173,28,208
785 DATA5,255,24,144,5,173,28,208,37,75
790 DATA141,28,208,32,119,200,165,251
795 DATA164,2,153,39,208,32,119,200
800 DATA165,251,141,37,208,32,119,200

```

```

805 DATA165,251,41,1,201,,240,8
810 DATA173,29,208,5,255,24,144,5
815 DATA173,29,208,37,75,141,29,208
820 DATA32,119,200,165,251,41,1,201,
825 DATA240,8,173,23,208,5,255,24
830 DATA144,5,173,23,208,37,75
835 DATA141,23,208,32,119,200,165,251
840 DATA41,1,201,,240,8,173,27,208
845 DATA5,255,24,144,5,173,27,208
850 DATA37,75,141,27,208,32,119,200
855 DATA165,251,164,2,153,248,7,96
955 DATA32,119,200,165,251,41,3,201,3
960 DATA208,1,96,168,192,,240,10,169,
965 DATA24,105,7,24,136,208,249,168
970 DATA132,2,32,119,200,165,251,9,1
975 DATA133,255,41,254,164,2,153,4,212
980 DATA169,15,153,5,212,32,119,200
985 DATA165,251,41,15,10,24,10,24,10,24
990 DATA10,24,164,2,153,6,212,32,8,200
995 DATA165,253,240,1,96,165,252
1000 DATA208,251,165,251,56,233,12
1005 DATA176,244,24,165,251,10,24,168
1010 DATA185,40,207,133,80,185,41,207
1015 DATA133,79,32,119,200,165,251
1020 DATA41,7,133,81,169,7,56,229,81
1025 DATA24,168,201,,240,12,165,80
1030 DATA24,106,102,79,24,136,208,248
1035 DATA133,80,32,8,200,165,253,240,3
1040 DATA76,240,199,165,252,133,82
1045 DATA165,251,24,42,38,82,24,42
1050 DATA,32,24,164,2,15,23,207
1055 DATA165,82,153,24,207,169,1
1060 DATA153,25,207,165,79,153,,212
1065 DATA165,80,153,1,212,165,255
1070 DATA153,4,212,96
1075 DATA32,119,200,165,251,41,15
1080 DATA141,24,212,96
1100 DATA32,119,200,165,251,56,233,40

```

1110 DATA144 4 24 76 240 139 165 251 141 70 3
1120 DATA32 119 200 165 251 56 233 25
1130 DATA176 237 165 251 141 71 3 32 119 200
1140 DATA165 251 141 72 32 119 200 165 251

```

1150 DATA41 1 141 70 3 165 251 41 2
1160 DATA141 74 201 240 10 173 71 3
1170 DATA201 24 208 7 76 240 149
1180 DATA32 8 200 165 251 24 42 38 252
1190 DATA24 42 38 252 24 42 38 252 24
1200 DATA173 251 165 253 24 105 208 24
1210 DATA133 252 169 4 133 81 173 70 3
1220 DATA173 71 3 192 240 11 24
1230 DATA105 40 144 3 24 230 81 136
1240 DATA208 245 133 80 173 73 3 240 8
1250 DATA165 81 24 105 92 24 133 81
1260 DATA169 133 254 173 70 3 24 42
1270 DATA38 254 24 42 38 254 24 42 38 254
1280 DATA24 172 71 3 192 240 13 24
1290 DATA105 64 144 3 24 230 254
1300 DATA230 254 136 208 243 133 253
1310 DATA173 73 208 8 165 254 24
1320 DATA105 32 24 144 5 165 254 24
1330 DATA105 64 24 133 254 173 14 220
1340 DATA41 254 141 14 220 165 1 41 251
1350 DATA133 1 160 173 74 3 208 29
1360 DATA173 72 3 145 80 177 251 145 253
1370 DATA200 192 8 208 247 165 1 9 4

```

COMMODORE 64 PROGRAMMING

```

1380 DATA133,1,17,14,220,9,1,141,14,220,96
1390 DATA173,72,3,145,80,160,40,145,80
1400 DATA169,,162,,133,82,133,83
1410 DATA164,82,177,251,164,83,145,253
1420 DATA200,145,253,230,82,230,83
1430 DATA230,83,192,7,208,235,165,253
1440 DATA24,105,64,144,3,24,230,254
1450 DATA20,254,133,253,230,163,224,2
1460 DATA208,212,24,144,179
2000 DATA32,126,124,226,123,97,255,236
2010 DATA108,127,225,251,98,252,254,160
2020 DATA106,,49,214,
2030 DATA134,30,142,24,150,139,159,126
2040 DATA168,250,179,6,189,172,200,243
2050 DATA212,230,225,143,238,248,253,46
2100 DATA32,119,200,165,251,133,80
2110 DATA32,119,200,165,251,24,170
2120 DATA164,80,76,240,255
2130 DATA32,119,200,165,251,41,7,133,81
2140 DATA32,119,200,165,251,170,165,81
2150 DATA208,18,138,240,2,169,8,133,82
2160 DATA173,22,208,41,247,5,82
2170 DATA141,22,208,96,201,1,208,18
2180 DATA138,240,2,169,8,133,82
2190 DATA173,17,208,41,247,5,82
2200 DATA141,17,208,96,201,2,208,16
2210 DATA138,41,7,133,82,173,22,208
2220 DATA41,248,5,82,141,22,208,96
2230 DATA201,3,208,16,138,41,7,133,82
2240 DATA173,17,208,41,248,5,82
2250 DATA141,17,208,96,201,4,208,18
2260 DATA138,240,2,169,16,133,82
2270 DATA173,17,208,41,239,5,82
2280 DATA141,17,208,96,201,5,208,5
2290 DATA138,141,24,212,96,201,6,208,5
2300 DATA138,141,5,220,96,138,141,138,2
2310 DATA96

```

Listing 2 — a demonstration program shows the versatility of the new commands

```

10 MODE=51828 GCOL=51770 PO=51334
20 GMOVE=52039 LINE=51754 TPO=51501
30 CLO=52151 GTEXT=52657 CFSR=53056
40 SPRITE=52164 SETSPRITE=52248
50 MUSIC=52453 VOL=52646 FX=53075
80 SYSGCOL,5,2 SYSGCOL,4,6
90 REM*IF YOU DO NOT HAVE PART ONE*
99 REM*GOTO290*
100 SYSMODE,0,0,1
110 SYSGCOL,1,0
120 FORN=0T0319STEP2
130 Y%=100-80*SIN(N**/160) SYSP0,2,N,Y%
140 NEXT
150 SYSGCOL,1,7
160 FORN=0T0199STEP6
170 SYSGMOVE,30,100 SYSLINE,2,300,N
180 NEXT
190 SYSGCOL,0,8
200 FORN=0T0199STEP6
210 SYSGMOVE,310,100 SYSLINE,6,30,N
220 NEXT
290 SYSMODE,0,0,0
300 A(0)=8 A(1)=5 A(2)=12 A(3)=12 A(4)=15
310 FORN=0T04
320 SYSGTEXT,N,0,235,0,A(N)
330 SYSGTEXT,N,1,5,2,A(N)
340 NEXT
400 FORN=0T04
410 X=N+5 C=A(N)+256 SYSGTEXT,X,0,114,0,C
420 SYSGTEXT,X,1,39,2,C
430 NEXT
500 FORN=0T04
510 X=N+10 C=A(N)+128 SYSGTEXT,X,0,16,0,C

```

```

520 SYSGTEXT,X,1,1,2,C
530 NEXT
590 FORN=0T0999 NEXT
600 SYSMODE,6,0,0 PRINT"J"
610 SYSGCOL,5,0 SYSGCOL,6,0
620 SYSGCOL,1,4
630 FORN=4T0315STEP4 SYSTPO,0,N,140 NEXT
640 SYSGCOL,1,8
650 FORN=0T0199STEP4
660 SYSTPO,0,4,N SYSTPO,0,315 N
670 NEXT
680 SYSGCOL,1,6
690 FORN=8T0311STEP4
700 S=100-90*SIN((N-8)*pi/152) SYSTPO,0,N,S
710 NEXT
720 SYSGCOL,1,2
730 FORN=8T0311STEP4
740 S=100-90*COS((N-8)*pi/152) SYSTPO,0,N,S
750 NEXT
790 FORN=0T0999 NEXT
800 PRINT"J"
810 FORN=0T039
820 Y%=12-12*SIN(N**/20) SYSGCOL,4,N
830 SYSCRSR,N,Y% PRINT"HELLO"

```

```

840 NEXT
920 M=15
925 X=32
930 FORK=7T02STEP-1
940 FORS=23T00STEP-2 T=5/(S+3)
944 SYSMUSIC,0,X,0,0,0,0
945 L=0-1:SYSMUSIC,1,X,0,0,L,0
947 FORTT=0T099-NEXT
950 K%=S/2 SYSMUSIC,0,X,15,K%,0,0
951 L=0-1 SYSMUSIC,1,X,15,K%,L,0
970 FORN=0T015STEPT V%=15-N SYSVOL,V% NEXTN,S,0
980 SYSVOL,0

```

MICRO TIP

TI-99/4A

A question of definition

Home Computing Weekly has printed a number of programs for the VIC-20 in two or even three parts. Typically, the first program defines the graphics and then a second program uses them.

So, what can the TI-99/4A do?

The standard character set is always restored when a program is completed and another loaded, so we can't use those.

In TI BASIC, the cassette loader uses the same area of VDP RAM as user defined graphics. Loading a tape immediately removes your definitions for these characters, so that's out.

Hmm... Extended Basic uses different memory mapping! If we write a small program to define characters 127 to 143, and then load a second program from tape, the redefined characters can be used.

That isn't very many characters, of course, but if memory is really tight, using an initial character defining program will save over 300 bytes of memory at minimum, and possibly as much as 500 bytes. That can make a difference sometimes.

Try it. In Extended BASIC enter and run

```
10 FOR T = 127 TO 143 CALL CHAR(T, 'F1010101F1')
:: NEXT T
```

Now load a tape program which uses (but does not define) characters 127 to 143. You will see they have retained their definitions from the first program.

If you do not have such a program, try something simple like:

```
10 FOR T = 127 TO 143 :: PRINT T;CHR$(T) :: NEXT T
```

Stephen Shaw

**Griddlebug/
Bogeyman
TI-99/4A £7.95**

Softstuff, PO Box 182, Cambridge

I can't help liking a game that rewards a high score with "Oh I say, jolly well done!" It makes a refreshing change from the usual jargon.

Griddlebug is fast moving, calling for quick responses. You have to keep griddlebug alive by guiding him to meals and avoiding the voracious Gridmaster by dodging behind Golden Apples or Power Packs. You must size up the situation quickly — delay is fatal. Success takes you to the next screen for more of the same.

The game is very difficult but persevere and you may discover

Gridmaster's weaknesses, then life gets easier. There are 10 levels — I gave up at three. The set-up routine is tiresome, otherwise a very good game.

I cannot say the same for Bogeyman. Your task is to fight germs causing Clive's cold — yes, that sort of Bogeyman. It is difficult to control with very poor key response. Scoring system is incomprehensible and the game must be RUN for each play. The instructions go on in a humorous way, which is fun but makes things less than clear. There are no on-screen instructions for either

instructions	30%
playability	70%
graphics	80%
value for money	75%



**Countdown
VIC20 + 8K/16K
£5.50**

Paramount, 67 Bishopton Lane, Stockton, Cleveland

This is a goodie. Once you realise your best chance of survival, and high score, is to keep moving, it shows all the ingredients of a really addictive game.

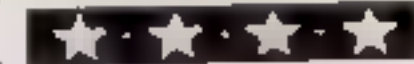
The scene is the countdown to a bomb going off. You must get out of the house (screen one), through the jungle (screen two) and down the sewers (screen three) where you find and defuse the bomb. If you succeed you are straight back to screen one for another go. Each screen has its quota of hazards, firing bolts, dropping coconuts and so on to be avoided. Unusually the first screen is the hardest

With three screens, the

programmer has gone to town on the graphics and colours. It shows what can be done with an expanded VIC. There are three skill levels but, rather than speeding up the action, it cuts down defusing time

My main complaint is that it only loaded properly about once in 10 attempts. I know it could just be my copy, but with an increasing degree of copy protection we seem to get increasing unreliability of loading. Sort it out fellows. No one wants even a brilliant game if it's too much of a pain to load

instructions	85%
playability	95%
graphics	92%
value for money	90%



**3-D Race
TI-99/4A £6**

Stainless Software, 10 Alstone Road, Stockport, Cheshire SK4 5AH

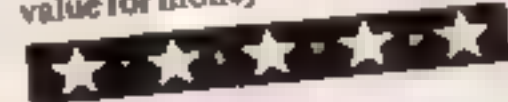
You are at the wheel of a high speed racer and you must overtake five other cars plus a ghost car which appears from time to time. After selecting a skill level (one — six), the five cars appear on the track and zoom off. You select first gear and accelerate after them. You can change lanes, accelerate and brake

Even at level one the game turned out to be pretty difficult. Although instructions accompany the tape I found difficulty at first in understanding what was going on, in particular which car I

was supposed to be driving. However, after several plays I got the idea and started enjoying the game. Speed, time, temperature and fuel are at the bottom of the screen. Graphics, giving a drivers eye view of the track, are excellent.

There are some pretty sophisticated car racing games on the market and, to be fair, 3-D Race does not come up to their standard but then it is written in BASIC (it has to be for the standard TI) and the programmers have used the language extremely well. All in all, good value for money.

instructions	80%
playability	80%
graphics	90%
value for money	90%



**From cars
to cruisers**

Newly-launched games for a selection of computers get the once over from our review panel

**Picture Puzzles
Dragon 32
£5.95**

Lyversoft, 66 Lime Street, Liverpool

You move them about using cursor keys spelled "curser" in the instructions') and a rather surprising release from a company which seems to specialise in fast action games. This has no action at all, being a sliding block puzzle program

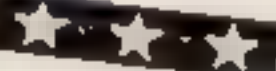
You must remember the sort of thing — you have a picture surrounded by a frame and one part is empty so that you can rearrange the picture and then try to reform it again.

This program contains six pictures each in 15 pieces and they are of a reasonably high graphic

press ENTER to make the move. You are shown the initial puzzle and then you observe the scrambling process. You can even create your own pictures if you so desire and have the time to spend

What I still find hard to accept is that anyone will want to pay this amount of money for something which in its original form cost pennies. If it's your thing then it will probably satisfy you. It certainly does all it claims but it bores me silly

instructions	D.C.
playability	60%
graphics	60%
value for money	80%



**Cruiser/
Character
Generator
TI-99/4A £5.55**

Solway Software, 6 Curzon Street, Maryport, Cumbria CA15 3EL

In Cruiser you go on a long pub crawl round a canal seeking refreshment at each of the lockside pubs. It doesn't matter if you're not a drinker as you may either collect beer or lemonade!

Using the arrow keys, you steer round the waterway starting from a marina at the top. The course becomes gradually more blocked as other boats appear and moor. Crashing into these too often results in a long walk home or a sailing.

You are given a bot load of

provisions, which gradually become depleted. Re-stocking can only be achieved by returning to the starting point.

The lockside pubs close after serving each pint, so during your journey they must be regularly re-opened to continue scoring

Overall, amusing with plenty of variety, skill levels run from 1 to 30, well crashproofed and even an option for users with black and white TVs

Side 2 has a useful character generator for defining your own characters and obtaining their hexadecimal codes.

instructions	100%
playability	75%
graphics	80%
value for money	100%



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(24hr answering)

How long will you survive on Moonbase?

Your skill as commander of a moonbase is called upon in Gary Burrows' strategy game for either model of the Spectrum

How it works
50-138 initial set up
142-148 decrease in supplies each week

152-160 screen display
200-250 oxygen
250-300 food
300-350 water
350-400 missiles
400-450 minerals
450-500 money
500-510 alien attack
900-912 end of game

You'll need to think sensibly when you play Moonbase ZX, my strategy game for either model of the Spectrum
You play the part of the



```

2 REM moonbase zap
3 REM by G. B. Burrows
4 REM
5 REM you can use the spectrump
50 LET v=4000: LET p=50: LET o1=200: LET w=200: LET m=100
1 LET wk=700
32 FOR B: BORDER AT PAPER TO C/B
40 LET aa=1: if you wish to buy more: LET aa=then enter the number of: LET aa
50 you wish to buy: IF aa=1 then press number 10: LET aa=you currently
have
130 GO TO 140
140 CLR
142 LET o1=INT RND*20: LET w=INT RND*20: LET m=INT RND*20: LET
v=v-1
44 IF aa=50 THEN LET aa=10
140 IF aa=100 AND aa=1000 THEN LET aa=INT RND*50
144 IF aa=1000 THEN LET aa=INT RND*50
148 IF aa=1 OR aa=10 OR aa=100 OR aa=1000 THEN GO TO 160
152 PRINT AT 0: MINERAL: G
154 PRINT AT 0: POPULATION: p: AT 0: OXYGEN: o1
156 PRINT AT 0: WATER: w: AT 0: MONEY: m: AT 0: MISSILES: m
160 IF RND=1 THEN GO TO 180
160 PRINT: PRINT: press a number
162 INPUT m: IF m=0 OR m=10 OR m=100 OR m=1000 THEN GO TO 180
164 GOTO 160
166 GOTO 160
168 GOTO 160
170 LET o1=o1-INT RND*20: LET w=w-INT RND*20: LET m=m-INT RND*20
172 PRINT: PRINT: you have (o1) units
174 LET o1=INT RND*20
176 LET w=INT RND*20
178 LET m=INT RND*20
180 PRINT: PRINT: food costs (v) a kilogram
182 PRINT: PRINT: water costs (w) a pint
184 PRINT: PRINT: oxygen costs (o1) per unit
186 PRINT: PRINT: missiles cost (m) each
188 PRINT: PRINT: you have (m) missiles
190 PRINT: PRINT: you have (o1) kilograms
192 PRINT: PRINT: you have (w) pints
194 PRINT: PRINT: you have (m) dollars
196 PRINT: PRINT: you have (p) population
198 PRINT: PRINT: you are currently (o1) oxygen up to
200 PRINT: PRINT: you can breathe for (w) days on the water surface you must
take oxygen with you
202 PRINT: PRINT: The more oxygen you take the longer you can breathe and the more
minerals you can bring back
204 PRINT: PRINT: enter the number of units you are taking: PRINT: aa
206 INPUT aa: IF aa=0 OR aa=10 OR aa=100 OR aa=1000 THEN GO TO 140
210 IF aa=1 THEN PRINT: aa: PAUSE 100: GO TO 140
212 LET v=v-aa
214 PRINT: PRINT: you managed to bring back (v) PRINT: kilogram
aa: PAUSE 100
216 LET aa=INT RND*20: aa: GO TO 140
218 PRINT: PRINT: you are under attack from alien spacecrafts
220 PRINT: PRINT: use your missiles to stop them
222 PRINT: PRINT: not more than (aa) a time: PAUSE 100

```

```

212 IF aa=1 THEN PRINT: aa: PAUSE 100: GO TO 140
214 INPUT aa: IF aa=0 OR aa=10 OR aa=100 OR aa=1000 THEN GO TO 140
216 PRINT: PRINT: you managed to bring back (v) PRINT: kilogram
aa: PAUSE 100
218 LET aa=INT RND*20: aa: GO TO 140
220 PRINT: PRINT: you are under attack from alien spacecrafts
222 PRINT: PRINT: use your missiles to stop them
224 PRINT: PRINT: not more than (aa) a time: PAUSE 100

```

Hints on conversion
Moonbase will run on the 16K ZX81 after removing Spectrum-only commands such as INK, PAPER and BORDER. It should also work on most other home computers with the minimum of change.

commander of a moon base and you must keep the base operational for as long as possible, which means ensuring you have enough oxygen, food, water, minerals and money
Try to keep the base running for as many years as possible
The program can be made easier or harder by changing the random values of v throughout

- Variables**
- a input variable
 - v random variable
 - o1 oxygen level
 - f food supply
 - w water supply
 - y year
 - p population
 - m missiles
 - aa money
 - m minerals



Earth Defence
£4.95

Arctic Computing, Main Street, Brandesburton, Driffield YO25 8RL

Earth Defence is Arctic's version of Missile Command. You must defend your cities and missile sites from destruction by invading nuclear missiles — a very unpleasant scenario.

The missiles are represented by lines moving down the screen. You must move your sights and fire in anticipation of the missile's position.

The game is very difficult to play, even on the easiest skill level, because there are so many missiles, and it is hard to judge when to fire. To add to the difficulty you only have a limited number of missiles, so it seems best to limit yourself to defending one city.

The graphics are fairly uninspired with the exception of the explosions. The sound is a good simulation of white noise. Should you survive the first attack wave you are given bonus points for the number of remaining missiles and undestroyed cities, and a new attack commences.

There are three levels of play, with one or two player option. The game also works with the Sinclair and Kempston joystick interfaces.

I didn't enjoy Earth Defence, but it seems an adequate version of what is, in my opinion, a poor arcade game.

instructions	80%
playability	35%
graphics	45%
value for money	45%



Rapedes
£5.95

Visions (Software Factory), Felgate Mews, Studland St., London W6 9JT

If a spider in the bath gives you the shivers then Rapedes — "The centipedes' revenge" — is perhaps one to avoid because you are confronted not only with giant arachnids but Spectrum owner eating snails and centipedes to boot.

Basically it's a traditional space invader-type game where aliens have been replaced by assorted creepies which advance down the screen through a field of mushrooms.

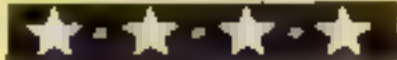
Graphics are fair with a particularly ugly spider and I found the text used for instruc-

tions and scores to be much clearer than many games.

There are five speed levels, on the highest of which life is usually short and so hectic that the hold feature is very useful in order to take a breather, sort out your next move or simply fetch a tin of insecticide. The option to use a Kempston joystick is available and would make life much easier.

On the whole it will appeal to those in search of "blast everything in sight" games. But, while by no means a bad game, I found interest began to wane quite quickly.

instructions	80%
playability	80%
graphics	85%
value for money	75%



Pat the Postman 48K
£6.95

Mikro-Gen, 24 Agar Crescent, Bracknell, Berks.

A maze game in which Postman Pat has to find a number of parcels hidden in the houses of a small town and deliver them to a mail train. Roaming the streets are a couple of nasties, who will do Pat in if they catch him, though he does have three lives.

An easy loading produced a request for a choice of amateur (three parcels to deliver) or professional (five parcels)

This selected, a very pretty display appears immediately. No on-screen instructions. An endless succession of trains runs across the top of the screen, and at the bottom is the post office,

which has a nasty habit of bursting into flames so Pat has to break off and run to the fire station for help.

Points are scored for successful mail runs and these are shown in a panel at the bottom of the screen. This also shows lives unused and a message HI=0 which must be the Hall of Fame referred to on the insert.

A lively little game with attractive graphics and an amusing story-line, but not very demanding or varied. I suspect it is aimed at the younger games player who will probably enjoy it.

	H.C.
instructions	70%
playability	60%
graphics	60%
value for money	50%



GAME FOR SOME FUN?

(Faded text, likely a title or subtitle for a game review)

Mr Wimpy 48K
£5.90

Ocean, Ralli Building, Stanley St., Manchester M3 5FD

A double helping of fun is on the menu when you taste this mouth watering offering from Ocean. Hero of the show is that traditional British dish, the Wimpy hamburger.

In the first stage of the 100 per cent machine code program as Mr Wimpy you take a tray and cross the screen Frogger style avoiding the attentions of Waldo the burger thief and moving manhole covers.

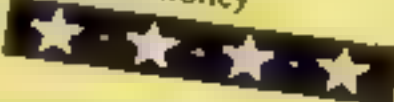
If successful in hanging onto your tray you now have one of the three ingredients for a Wimpy which you have to carry back to the start. Repeat for each

ingredient and you move to the next stage where you dash round the kitchen making the Wimpy ingredients drop onto a plate.

The villains in part two are kitchen rebels against which your only defence is a limited supply of pepper replenished only if you pick up bonus gems, ice creams or a cup of coffee.

The game, playable with keyboard or joystick, has very good graphics with particularly smooth movement. All in all a good example of the tremendous improvement in Spectrum game graphics on recent offerings.

instructions	85%
playability	90%
graphics	90%
value for money	80%



Jumbly 48K
£6.95

dk'Tronics, Shire Hill Industrial Estate, Saffron Walden, Essex CB11 3AX

Here's a program for puzzle freaks with the chance to win £150 or more into the bargain.

Like most good things the idea behind Jumbly is simple, based on a "slider" puzzle, where you slide plastic tiles about in a grid to form a picture or achieve a set order of numbers or letters.

Starting with one of three titles of the animated pictures available, the computer jumbles up the blocks forming the picture in a five by four grid and loses one block to leave room for sliding using keyboard or joystick. Complete the puzzle within the target number of moves and you move on to the next title. Apart

from the three starter pictures, the others remain secret until you have successfully completed the previous picture.

Once past the starter section the game becomes more complicated by the introduction of screen scrolling in different directions at various speeds. dk's description of this is "mind boggling". Mine is less polite but this is a family magazine!

If you manage to complete the final picture you will be eligible to enter a design competition for Jumbly II.

Difficult, challenging — but very enjoyable.

instructions	80%
playability	85%
graphics	90%
value for money	75%



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Seriously speaking

You always said your computer was for more than playing games, didn't you? Here's what our review team thought of some programs to help you do that

Record Keeper BBC 32K £13.80

British Broadcasting Corporation, 35 Marylebone High Street, London, W1M 4AA

An extremely well thought out database package comprising of cassette and a 48-page manual. This is written to a very high standard, enabling anyone to get the program running in a very short time.

That is not the limit of the BBC's generosity, however, besides the cassette version there is a disc version too. What's more, there is a full explanation of their differences and how files from one may be read by the other.

The program is very robust and flexible with particularly good

'wild card' search facilities. One other novel is the superb report generator program also enclosed, which allows an almost infinite variety of print styles and formats, all of which can be saved, making it invaluable for use by small businesses, clubs etc.

All this praise and no problems? Well the only real and difficult problem I found is the small number of records it can keep in a file. All have to be in memory at the same time so only about 90 names and addresses can be held per file. This does increase speed, however, and as long as you can work within these limits this is the program for you.

	D.C.
instructions	95%
ease of use	95%
display	95%
value for money	100%



Beyond BASIC 48K Spectrum £9.95

Sinclair Research, 25, Willis Road, Cambridge CB1 2AQ

"Take the agony out of assembler code", screams the packaging. Anyone else grappling with learning machine code will know how eagerly I fell upon this program.

It has three sections. 1 ROM & RAM store, registers and simple machine code elements explained, 2 14 assembler commands are described, with 'moving' examples, 3 a mini-assembler to create your own program with these commands and see their effects.

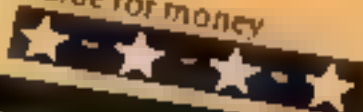
The registers and memory are graphically represented, showing their state before, during, and after each command — helpful to

anyone who finds pictures easier than straight text.

But, assuming that nobody is daft enough to start machine code before becoming proficient in BASIC, much of the explanation covers known ground, the commands available are a very small selection of total assembler commands and, although the high/low byte order is demonstrated, your attention is not drawn, nor is explanation given.

But, if you have already ploughed through the books and are now searching for the 'missing link' between understanding assembler code and its application, then this program will add nothing to your knowledge.

	D.C.
instructions	90%
ease of use	85%
display	85%
value for money	75%



Musicmaster 48K Spectrum £9.95

Sinclair Research, 25 Willis Road, Cambridge CB1 2AQ. If you are learning the rudiments of music, this program should help your studies.

On occasions, I have been known to produce the odd note out of various instruments so I was naturally very interested. The tape comes with explanatory booklet, and overlay strip for computer keys.

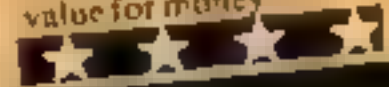
There are many options. Perhaps one of the most interesting produces 'notes on music'. This demonstrates pitch, and duration, of notes, as well as all the rests. Also the time and key signatures are explained.

If you fancy yourself as a composer you can, replay and

alter your own tune of up to 1,000 notes. A few personal comments I can never remember seeing a dotted semibreve rest. Perhaps they have just evaded me or maybe I've been playing the wrong music. Don't all major scales have the form TTSTTTT? And I believe that rhythm is too complicated to be just placed under the general heading of time and bar line.

These comments are personal, and not intended to detract from the excellence of the program. Besides, I would assume that any serious student would have the guidance of a human tutor. I do feel, though, that the program may be priced out of the reach of the younger budding musician.

	B.B.
instructions	100%
ease of use	100%
display	100%
value for money	75%



Cartoon Animation Spectrum £10

Fowler Software, Hendon Mill, Nelson, Lancs.

The advert claims the demo shows large-style characters walking across the screen. All I can say is they don't half walk funny in Lancashire!

The legs open and close, from the knee down, but at no time does any leg move past the other. Nor is it explained how this extraordinary effect was created, should you be daft enough to wish to copy it.

In fact, this preliminary effort seems to have exhausted the programmer, since all the other characters glide statically on, one leg poised in mid-air for the step that it never taken, the other apparently attached to an

invisible roller skate. The idea seems to be that you design a cartoon type line drawing on a combination of character blocks and can glide it up, down or sideways. But only in black and white — coloured characters cannot move.

The ability to understand the instructions — a 16-page booklet plus an errata sheet — means you probably already have enough knowledge to program a similar but better effect, and in full colour, yourself.

Describing this as "animation" insults the intelligence, and there are many good utilities on the market offering far more for far less. Avoid this one.

	D.C.
instructions	45%
ease of use	20%
display	10%
value for money	10%



Cassfile TI-99/4A £4.95

Christine Computing, 6 Florence Close, Watford, Herts

Cassfile is a utility for keeping personal records on file using a cassette tape. The program begins by asking whether you wish to load an old file or create a new one. You are then taken through the various procedures for which ever option you select.

Up to five titles per record may be specified and a maximum of 62 records kept.

After data has been entered you are offered various options from menu to search, list and add to files, or display, delete or change a record. Updates are provided after each entry has been completed.

Although the program has been competently written, various spelling mistakes fail to give that professional finish. There were

also no written instructions provided — at least not with my review copy.

Although the cassette was labelled "instructions in program" they certainly weren't on screen either.

If you're already familiar with the file handling capabilities of the TI then there's no problem, but a beginner might find and procedures confusing.

A comprehensive set of instructions and, on tape, an example set of data files would transform Cassfile from being just adequate to very good.

J.W.

	n/a
instructions	75%
ease of use	60%
display	80%
value for money	



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This is it, the ultimate Fruit Machine for the VIC with nudge, hold and respin 100% machine code. "Overall Jackpot is a beautifully written simulation giving superb graphics, animation and use of colour. In fact, this program makes Commodore's Fruit Machine cartridge look unbelievably cheap and nasty." Home Computing Weekly No. 20 19/7/83. £5.50

KWAZY KWAKS

Accuracy and speed are required for this Shooting Gallery, superb use of colour and graphics in this new and challenging game from the author of Jackpot. 100% machine code, joystick or keyboard control. £5.50

PACMANIA

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This is a Minefield with a difference as you step on the stones whilst collecting purple boxes which give you both time and points, they disappear from beneath your feet. DO NOT DESPAIR! "BUGSY" will randomly replace the stones but avoid bumping into him or its sudden death! An original compulsive and challenging game . . . £5.50

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At last its here, specially written for the 64, by the author of "JACKPOT" the ultimate Fruit Machine program for the VIC £5.50
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WESTMINSTER

A game for up to four players, can you lead the party of your choice and win the general election, you tour the 60 constituencies (seats) buying votes, when you can, (just like the real thing), this must be one of the first board type games specially written for the computer. Why play on your own, have fun with your family and friends playing WESTMINSTER. £5.50

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A game for two to twenty players, become a tycoon of the motor trade, you must obtain gearboxes, tyres and engines to produce cars for sale. Form syndicates, buy and exchange parts, buy dealerships, but be careful, you may become bankrupt and have to liquidate, find out what you are made of, have you got what it takes to become a WHEELER DEALER. £5.50

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DEALER ENQUIRIES WELCOME



Space gets crowded as you fight off the invaders

Unlike most shoot-'em-up games written in BASIC, my Space Debris game is fast and addictive and has some original features which could only be achieved on the BBC micro.

The program runs in mode 2 on the model B with operating system 1.2 and occupies 5.8K and requires a pair of joysticks.

You control a space ship at the bottom of the screen and have to shoot the approaching invaders with your laser beam.

When the beam hits an invader it may just chop a bit off or the resulting explosion may leave some debris behind — hence the name of the game

How It works

- 10-200 set up variables, display instructions
- 210-250 set up sound envelopes
- 260-460 set up user-defined graphics for aliens
- 490 choose next alien
- 500 check for explosion if alien hit
- 520-560 choose next alien after you have been playing for a while. This is so the screen gets more crowded as the game goes on
- 570-610 draw canyon
- 650-700 joystick control sub-routine
- 710-1460 PROCedure to draw aliens on screen
- 1470-1560 PROCedure to fire laser
- 1570-1800 explosion sub-routine for alien hit
- 1810-1960 more shape definition and drawing
- 1970-2110 instructions
- 2120-2180 joystick options
- 2190-2500 ship explosion
- 2510-2620 score, end of game PROCedure, extra ship
- 2690-2750 error trap — ESCAPE pressed. If you keep getting this type 1. Then REPORT PRINT ERL will tell you about the error. Disc users must set PAGE = &E00

This feature makes the game difficult because you cannot rely on a single hit to destroy an invader, which is more real to life than if you hit a wing tip and the entire invader explodes.

The waves build up with different multi-coloured invaders appearing along with the previous waves, so after a while the screen gets pretty full.

If you manage to survive the first five waves you will find the sixth wave is very different.

First of all the screen changes colour — making some of the invaders difficult to see — and large solid triangles appear.

New features make Space Debris a challenging game. Kevin Boyd wrote the program for the BBC model B micro with two joysticks

```

10 REM *****
20 REM *
30 REM * SPACE DEBRIS *
40 REM *
50 REM * BY *
60 REM *
70 REM * KEVIN BOYD *
80 REM *
100 REM *
110 REM *****
120 ONERROR GOTO 2690
130 MODE 7
140 PROC INTRO
150 MODE 2
160 SH=3
170 S=0
180 SHIPX=640
190 SCORE=0
200 P=30
210 ENVELOPE1,1,20,-2,20,10,100,1,30,4,0,-5,120,00
220 ENVELOPE2,1,0,0,0,1,1,1,30,-1,0,-1,126,60
230 ENVELOPE3,3,0,0,0,1,1,1,127,0,0,1,126,0
240 ENVELOPE4,1,20,-1,1,10,5,30,7,0,-4,0,-5,126,00
250 ENVELOPE5,1,-6,26,26,255,255,255,50,0,0,50,12
6,0
260 VDU23,224,0,0,0,0,16,16,16
270 VDU27,225,16,16,16,16,16,0,0,0
280 VDU27,226,170,60,40,60,40,0,0,0
290 VDU23,227,127,1,1,1,1,1,0,0
300 VDU23,228,0,254,174,174,174,174,254,0
310 VDU23,229,0,0,120,77,77,120,0,0
320 VDU23,230,0,0,0,40,40,0,0,0
330 VDU23,231,153,165,165,255,153,153,129,129
340 VDU23,232,71,77,64,1,0,120,64,77,71
350 VDU23,233,0,0,0,177,127,0,0,0
360 VDU23,234,240,4,2,1,1,2,4,240
370 VDU23,235,0,0,0,254,254,0,0,0
380 VDU27,236,0,0,0,0,60,76,24,26
390 VDU27,237,0,0,60,126,0,0,0,0
400 VDU27,238,24,24,0,0,0,0,0,0
410 VDU23,239,255,126,60,24,0,0,0,0
420 VDU23,240,129,66,60,60,60,60,66,129
430 VDU23,241,129,66,36,0,0,0,66,129
440 VDU23,242,129,66,0,0,0,0,66,129
450 VDU23,243,255,255,255,255,255,255,255,255
460 VDU23,244,0,0,0,0,24,60,126,255
470 TIME=0:FORO=1TO 00:NE 1TD
480 REM**** MAIN ROUTINE *****
490 IF TIME 10 THEN A=RND(1200):PROC_SHAPE1:VDU30:VDU11
500 IF POINT(SHIPX,30)<>OR POINT(SHIPX+25,40)<>OR P
OINT(SHIPX+50,30)<> THEN PROC_SHIP_EXP:GOTO480
510 IF TIME>500 THEN A=RND(1200):PROC_SHAPE2:VDU30:VDU1
1
520 IF TIME>1000 AND TIME<5000 THEN A=RND(1200):PROC_SH
APE 3:VDU30:VDU11
530 IF POINT(SHIPX,30)<>OR POINT(SHIPX+25,40)<>OR P
OINT(SHIPX+50,30)<> THEN PROC_SHIP_EXP:GOTO480
540 IF TIME>2000 AND TIME<5000 THEN A=RND(1200):PROC_SHA
PE4:VDU30:VDU11
550 IF TIME>3000 AND TIME<7000 THEN A=RND(1200):PROC_SHA
PE6:VDU30:VDU11
560 IF POINT(SHIPX,30)<>OR POINT(SHIPX+25,40)<>OR P
OINT(SHIPX+50,30) THEN PROC_SHIP_EXP:GOTO480
570 IF TIME 1500 AND TIME 5100 THEN VDU19,0,14,0,0,0
580 IF TIME 5000 AND TIME 5100 THEN VDU19,0,17,0,0,0
590 IF TIME 1700 AND TIME 17100 THEN VDU19,0,10,0,0,0
600 IF TIME 20000 THEN VDU19,0,0,0,0,0
610 IF TIME>5000 AND TIME<10000 AND RND(20)=10 THEN PRO

```

You can dodge or shoot at the triangles but you will only be able to take chunks out of them. These are worth 100 points each.

The seventh wave is a variation on the sixth.

Two triangles join to form a V-shaped canyon. Of course, you will always head for the thinnest part of the canyon to shoot your way through, but inside the canyon are two partially joined flashing black and white stars. If you hit these you score 1,000 points.

You start off with three lives and gain one extra with every 2,000 points scored.

Your score and the number of lives left are displayed each time you lose a ship

An elaborate three-tone sound effect will sound when an extra life is given

Two methods of controlling your craft are given:

- Absolute Control moves the ship relative to the position of the joystick and needs delicate control. It means that if the joystick is on the far left the ship will be on the far left of the screen and as it is in the middle that's where your ship will be, and so on.

- Direction Control moves the ship in the direction you point the joystick. If the stick points left the ship will move to the left and the same for the right. But if the stick is in the middle the ship will not move.

Both methods have their advantages and disadvantages — you'll have to experiment to see which you prefer.

To change your method of control press ESCAPE and then you can choose your method or end the game.

By the way, my high score is 7,565. See if you can beat it!



BBC PROGRAM

```

C_SHAPE7
628 IFTIME>10000 AND RND(10)=5 THENPROC SHAPE8:PROC_5
SHAPE7
630 PROC SHAPE5
640 IF POINT(SHIPX,30)<>0OR POINT(SHIPX+25,40)<>0OR P
OINT(SHIPX+50,30) 0THENPROC SHIP_EXP:GOTO480
650 JOYX=ADVAL(1)
660 FIREX=ADVAL(0)AND3
670 IFFIREX=1THENPROC FIRE
680 IFOPTION=1THEN SHIPX=JOYX/56+15
690 IFOPTION=2THEN IFJOYX<1000 AND SHIPX>10THEN SHIPX
=SHIPX-32 ELSE IF JOYX>63000 AND SHIPX<1200 THEN SHIPX=
SHIPX+32
700 IFS>=2000ANDS<10THENPROC EXTRA_SHIP
710 GOTO480
720 DEFPROC SHAPE1
730 VDU5
740 MOVEA,1000
750 GCOL0,4
760 PRINTCHR#224
770 MOVEA,1000
780 GCOL0,5
790 PRINTCHR#225
800 MOVEA,1000
810 GCOL0,7
820 PRINTCHR#226
830 VDU4
840 ENDPROC
850 DEFPROC SHAPE2
860 VDU5
870 MOVEA,1000
880 GCOL0,4
890 PRINTCHR#227
900 MOVEA,1000
910 GCOL0,5
920 PRINTCHR#228
930 MOVEA,1000
940 GCOL0,11
950 PRINTCHR#229
960 MOVEA,1000
970 GCOL0,12
980 PRINTCHR#230
990 VDU4
1000 ENDPROC
1010 DEFPROC_SHAPE3
1020 VDU5
1030 GCOL0,7
1040 MOVEA,1000
1050 PRINTCHR#231
1060 VDU4
1070 ENDPROC
1080 DEFPROC_SHAPE4
1090 VDU5
1100 GCOL0,5
1110 MOVEA,1000
1120 PRINTCHR#232
1130 GCOL0,4
1140 MOVEA,1000
1150 PRINTCHR#233
1160 GCOL0,5
1170 MOVEA+50,1000
1180 PRINTCHR#234
1190 GCOL0,4
1200 MOVEA+50,1000
1210 PRINTCHR#235
1220 VDU4
1230 ENDPROC
1240 DEFPROC_SHAPE5
1250 VDU5
1260 MOVESHIPX,P
1270 GCOL0,2
1280 PRINTCHR#236
1290 MOVESHIPX,P
1300 GCOL0,3
1310 PRINTCHR#237
1320 MOVESHIPX,P
1330 GCOL0,4
1340 PRINTCHR#238
1350 VDU4
1360 ENDPROC
1370 DEFPROC_SHAPE6
1380 VDU5
1390 GCOL0,9
1400 MOVEA,1000
1410 PRINTCHR#239
1420 GCOL0,10
1430 MOVEA,1000
1440 PRINTCHR#244
1450 VDU4
1460 ENDPROC
1470 DEFPROC_FIRE
1480 SOUND1,1,10,10
1490 MOVESHIPX+25,50
1500 A=0:FORFX=100TO1000STEP10,2
1510 IFA=0THENPLOT5,SHIPX+25,FX
1520 IFA=0ANDPOINT(SHIPX+25,FX+4) 0THENPROC EXP

```

```

1530 NEXT
1540 IFA=0THENFRX=FX
1550 MOVESHIPX+25,50:PLOT7,SHIPX+25,FRX
1560 ENDPROC
1570 DEFPROC_EXP
1580 IFPOINT(SHIPX+25,FX+4)=6THENSORE=SCORE+100:SOUND
2,4,190,10:S=S+100
1590 IFPOINT(SHIPX+25,FX+4)=15THENPROC_STAR
1600 IFPOINT(SHIPX+25,FX+4)=6ANDPOINT(SHIPX+25,FX+4)<
>15THEN SCORE=SCORE+50:SOUND0,2,4,10:S=S+50
1610 VDU5
1620 GCOL0,7
1630 MOVESHIPX,FX
1640 PRINTCHR#240
1650 MOVESHIPX,FX
1660 GCOL0,8:PRINTCHR#243:GCOL0,7
1670 MOVESHIPX,FX
1680 PRINTCHR#241
1690 MOVESHIPX,FX
1700 GCOL0,8:PRINTCHR#243:GCOL0,7
1710 MOVESHIPX,FX:PRINTCHR#242
1720 MOVESHIPX,FX
1730 GCOL0,8:PRINTCHR#243
1740 MOVESHIPX+20,FX+30:PRINTCHR#243
1750 MOVESHIPX,FX+30:PRINTCHR#243
1760 MOVESHIPX,FX+60:PRINTCHR#243
1770
1780 A=1
1790 FRX=FX
1800 ENDPROC
1810 DEFPROC_SHAPE7
1820 GCOL0,6
1830 MOVERND(500),1023:MOVERND(600)+600,1023
1840 PLOT85,RND(700)+100,RND(400)+200
1850 ENDPROC
1860 DEFPROC_SHAPE8
1870 GCOL0,6
1880 MOVER,1023:MOVERND(1279,1023):PLOT85,0,RND(400)+600
1890 MOVER,1023:MOVERND(1279,1023):PLOT85,1249,RND(400)+600
1900 ENDPROC
1910 DEFPROC_SHAPE9
1920 VDU5
1930 R=RND(800)+100
1940 MOVER,1020
1950 GCOL0,15:PRINT"*";MOVER,1005:PRINT"*":ENDPROC
1960 VDU4:ENDPROC
1970 DEFPROC_INTRO
1980 PRINTCHR#130CHR#157
1990 PRINTCHR#130CHR#157CHR#134CHR#141" S P A C E
D E B R I S "
2000 PRINTCHR#130CHR#157CHR#135CHR#141" S P A C E
D E B R I S "
2010 PRINTCHR#130CHR#157
2020 PRINT""You are in control of a galactic star s
hip.And it is your job to shoot down as many enemy sh
ips as possible "
2030 PRINT""In the later stages of the game large so
lid triangles appear and you can shoot at them or
dodge them But soon these triangles will join togeth
er "
2040 PRINT " SHIPS = 50 POINTS"
2050 PRINT " TRIANGLES = 100 POINTS"
2060 PRINT " FLASHING CHR#136"*CHR#137"+ 1000 POINTS"
2070 FORI=1TO2:PRINTCHR#130CHR#157CHR#135CHR#141"CONTR
OL CRAFT BY RIGHT JOYSTICK":NEXT
2080 PRINTCHR#136" PRESS A KEY TO CONTINUE ";A=GET
2090 CLS:PRINT " YOU START OF WITH 1 MEN AND A":PRIN
T "EXTRA MAN IS AWARDED EVERY 1,000 POINTS"
2100 PRINT "YOUR SCORE AND NUMBER OF MEN LEFT IS
DISPLAYED WHEN YOU LOSE A SHIP "
2110 PRINT "CHOOSE WHICH METHOD OF CONTROL YOU WANT":
PRINT " 1:ABSOLUTE CONTROL.":PRINT " 2: DIRECTION CONTRO
L."
2120 PRINT "INPUT NUMBER (1or2) ";I:=GET#
2130 IF I# "1"AND I# "2" THENPRINTCHR#7 BOTO2110
2140 IF I# "1" THEN OPTION=1 ELSE OPTION=2
2150 PRINT ""
2160 PRINTCHR#136" PRESS FIRE BUTTON TO START GAME "
2170 A=ADVAL(0)AND3
2180 IF A=1 THEN ENDPROC ELSE GOTO2170
2190 DEFPROC_SHIP_EXP
2200 T1=TIME
2210 MOVESHIPX+25,25
2220 SOUND0,3,4,30
2230 X=5:Y=SHIPX+75:Z=5
2240 FORI=SHIPX+25TOSHIPX+25+150STEP-4
2250 MOVE1,X
2260 DRAW1,X
2270 MOVESHIPX+25,5
2280 PLOT7,1,X-16
2290 MOVEY,1
2300 DRAWY,X
2310 MOVESHIPX+25,5
2320 PLOT7,Y,X-16
2330 MOVESHIPX+25,Z

```

BBC PROGRAM

```

2340 DRAWSHIPX+25,7
2350 MOVE SHIPX+25,5
2360 PLOT 7, SHIPX+25, 7-14
2370 X=X+10:Y=Y+10:Z=Z+12
2380 VDU19,0,RND(14)+1,0,0,0
2390 VDU19,RND(7)+1,RND(14)+1,0,0,0
2400 NEXT
2410 VDU 70
2420 SOUND1,3,30,1:SOUND2,3,50,1:SOUND3,3,70,1
2430 SH=SH-1
2440 IF SH=0 THEN 2510
2450 CLS:PRINT " " SCORE = ":SCORE
2460 PRINT " SHIPS = "15H
2470 FOR D=1 TO 1000:NEXT D
2480 GOTO 2400
2490 TIME=TT
2500 ENDPROC
2510 CLS
2520 PRINT " " SCORE = ":SCORE
2530 PRINT " "PRESS FIRE BUTTON TO TRY AGAIN"
2540 A=ADVAL(0)AND1
2550 IF A=1 THEN 2560 ELSE GOTO 2540
2560 CLS:GOTO 2400
2570 DEFPROC EXTRA SHIP
2580 #X=1,5
2590 SOUND1,4,700,70:SOUND2,4,270,70:SOUND3,4,250,70
2600 #X=1,5
2610 SH=SH+1:GOTO
2620 ENDPROC
2630 DEFPROC STAR
2640 SCORE=SCORE+1000:SH=SH+1000
2650 #X=1,6
2660 #X=1,7
2670 SOUND2,5,10,40:SOUND3,5,50,70
2680 ENDPROC
2690 MODE7:PRINT " "DO YOU WISH: "
2700 PRINT " "1: TO END GAME "
2710 PRINT " "2: CHOSE NEW MOVEMENT METHOD. "
2720 ANSW=GET
2730 IF ANSW < 1" AND ANSW < 2" THEN PRINT CHR#7:GOTO 2720
2740 IF ANSW = "2" THEN RUN
2750 END

```

Micro Tip

BBC

Label your keys

This program for the BBC micro and the Epson F/T MkIII printer allows you to set up a function key strip and print it to precisely the right size

10-20 draw the function key strip using PROC box

30 allows you to enter the ten commands into array SS(x)
Each string is carefully positioned in its own box. Note maximum string length is six characters

40 print the function key strip to the printer using PROC dump

60-70 PROC box

80-170 PROC dump, using the bit image printing of the EPSON the required portion of the screen is dumped to the screen

180-240 PROC input, allows you to enter the commands and also the number of times you wish to print the strip

This is a useful utility program and can save you scribbling on odd scraps of paper etc.

J. P. Riggs

```

REM THIS PROGRAM PRODUCES A
REM PERFECTLY SPACED FORM FITTING
REM KEY STRIP ON THE EPSON MK III OR AT 10.1111
% MOD 4
20 INPUT TO PROC box (12+09 6+5,800,09 6,204) NEXT
30 REM HERE YOU CAN INPUT
40 REM HERE YOU CAN INPUT dump #x1
50 END
60 DEFPROC box
70 "DRAW THE STRIP"
80 "DRAW THE STRIP"
90 "DRAW THE STRIP"
100 "DRAW THE STRIP"
110 "DRAW THE STRIP"
120 "DRAW THE STRIP"
130 "DRAW THE STRIP"
140 "DRAW THE STRIP"
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950 "DRAW THE STRIP"
960 "DRAW THE STRIP"
970 "DRAW THE STRIP"
980 "DRAW THE STRIP"
990 "DRAW THE STRIP"
1000 "DRAW THE STRIP"

```

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The object of the game is to collect treasure from a maze without losing lives and then to achieve the highest score possible. Each item of treasure is worth a number of points, the more treasure collected, the higher the score.

There are a number of hazards within the maze, pitfalls, trapdoors, portcullis and wandering SKULLS. The SKULLS will attempt to guard the treasure by catching you, but you may find within the maze a green cross which will give you a period of safety during which you may attack the SKULLS.

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- Safety ladders to lower levels of the maze.
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presents
TWO
great games
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Developments



The chart-hitting

Mad Martha



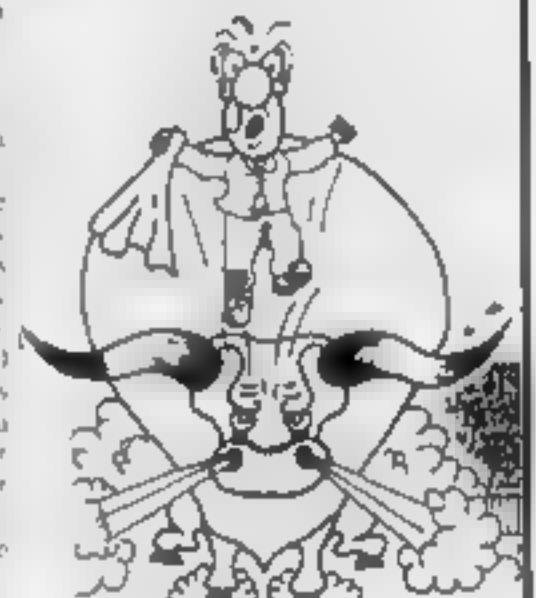
And now -

Mad Martha II



Henry is the hen pecked fellow who dines late. One night Henry can take no more. He steals his wife's key from his wife's purse and sneaks out of the house being sure to lock it. He wakes the baby and drops her flat and hears her cry. He brightens up and has some fun. Trouble is he runs out of money. His only way to cash some is to gamble. He finds remaining pounds on the spinning wheel at the roulette table. Just as Henry is getting on to his morning at the tables his wife Mad Martha has noticed his absence. Realising Henry is somewhere with the hokey cokey she sets out to get him with an axe. What will you do in this haunt of the living dead? Henry will be the first to die.

Time for the annual holiday and Martha decides to visit her fatherous. Marie who is a waterbury just like her father. The late poor Martha sets out on a bus tour with her son, King Arthur, taking orders for Marie to keep an eye on Henry's behaviour. Martha knows Henry has a Spanish temper and has planned a secret rendezvous. Henry leaves the hotel bringing with him a saviour and Marie who is still a waterbury. The driving he takes us through the thick and spiky of a madcap chase taking in an angry mother dog, a bull fight and a wild west. Henry is forced to play the leading role. What a ride! Lights and fire for all the family.



*** FOR 48K SPECTRUM ONLY £6.95** Post & Packing 40p *****

A game to invest in... funny, genuinely original and the graphics are great hit the key to begin, the Spectrum plays a real Hollywood-style movie theme tune, and the hunt is on! *Personal Computer News*

Marvelous adventure, really dotty a refreshing change from some of the doomladen programs encountered nowadays... a game where you won't get to the next stage without solving the present conundrum. *Popular Computing Weekly*

- ★ Full adventure format - accepts multiple commands of own entry, in plain English
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a, b, c... Lift Off! Spectrum £7.95

Longman, Longman House, Burnt Mill, Harlow, Essex CM20 2JE

A reading and language development game designed to introduce children to the alphabet. It will also help with the names and sounds of letters, as well as giving scope for picture and word recognition.

After an over-long loading sequence which includes, unnecessarily, a complex Longmans Micromega logo and a slightly animated title page, the first section begins with an upper case and lower case alphabet. Pressing any key starts. The screen displays a nicely drawn apple, the word apple in lower

case, and a capital A. A 'next letter' banner invites the child to press the next letter. At any time, pressing **ENTER** moves onto the second section, Lift Off! The screen shows a rocket ready, and a conveyor belt with crates. As each crate moves under it opens to reveal one of the pictures in part 1. Simultaneously a word appears. If word and picture match pressing **S** (for snap) loads the cargo. When six pieces have been loaded the rocket makes a spectacular lift off.

A pair of programs for pre- and early school years well worth the money. Superb graphics, nicely laid out screen, and sound used to good effect.

instructions	C.B.	95%
ease of use		100%
display		100%
value for money		95%



Fractions 1 48K Spectrum £5.95

Kemsoft, The Woodlands Kempsey, Worcester

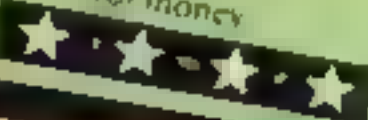
A teaching program for children up to eleven years. Fractions 1 had clear inlay instructions and auto ran revealing a menu offering Definition of Fractions, Addition, Subtraction, Multiplication and Division - plus tests after each section.

Good teaching practice of using large letters and digits to complement the simple logical teaching steps are followed. We are taken slowly and carefully through a good basic definition of fractions, an explanation of a "whole" to a fraction being part of a whole. Each is repeated in a different way and supported by effective use of graphics, as is the

subsequent section explaining halves and onwards - shame that "fifths" appears as "fiths". Major points are emphasised by a hand with pointing finger. After practice at typing in fractions Magic Water Jugs fill up, accompanied by sound, to appropriate levels. The test uses the Jug and wrong answers bring more teaching as does entering "help".

Entering "menu" returns the program to that point. Each question answered correctly brings immediate reinforcement of a noisy flashing "well done". The end shows individual scores, average score and time taken if two or more children are playing.

instructions	T.W.	85%
ease of use		87%
display		79%
value for money		90%



Clever Clogs - Partytime 48K Spectrum £6.50

Computer Tutor, PO Box 3, Neots, Cambs PE19 3NW

A program for the over threes well founded in educational practice. Provided an adult works with the young user it will teach and help to develop concepts, unlike many so called "educational" programs.

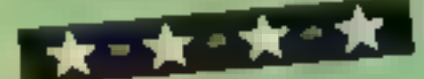
It deals with number and letter recognition, number concepts and bonds, adding, shape matching, spatial relationship, and can be tailored to the user's present and future development level. If this is jargon to you, then accept that it will truly benefit any child of three seven one way or another.

Entirely in BASIC, and none the worse for it, it features attractive and colourful graphics, a small creature called 'Clever Clogs', and well written sound based on nursery rhymes. The ZX Printer is utilised if connected. Six different 'games' are available, so there's no shortage of fun.

This program cries out for Microdrives. The authors have tried to pack in so much there is just no room for extra UDGs to improve each game. With a Microdrive, each could be loaded the RAM under software control and could be more complex. Recommended.

instructions	n/a
ease of use	80%
display	90%
value for money	85%

D.M.



Sheepdog BBC 32K £9.95

Longman, Longman House Burnt Mill, Harlow Essex CM20 2JE

I reviewed this some months ago as a school package and commented then that I didn't feel it would have much use in the home.

Longman obviously disagrees (or is disappointed by its school sales) and has now produced an attractive home pack with the legend "the software used in schools". It won't ever be used in

The aims are quite widespread learning concepts of space direction estimation number and angle - which it does go some way towards fostering. The child, or children has to steer

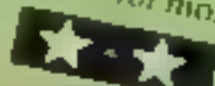
sheep through a gate by commanding a sheepdog. The sheep don't often move in a straight line - which is true to life, at least - and if they hit the fence you start again.

It works well and is well error trapped so young fingers cannot do too much harm but it is extremely repetitive.

The documentation is not a patch on the school's version which was one of its best features. I would now describe it as adequate only. Price is still a reflection of the packaging rather than program quality and graphics are very poor - sheep heads are unrecognisable.

instructions	D.C.	75%
playability		40%
graphics		50%
value for money		50%

D.C.



Speech Marks 48K Spectrum £7.95

Sinclair Research, 25 Willis Road, Cambridge CB1 2AQ

The structure and purpose of this program are similar to Sinclair's Apostrophe program to teach general punctuation, but this one deals with the punctuation of direct speech.

While the Spectrum's character set caused problems with the apostrophe fortunately, the speech marks in Speech Marks are much easier to see.

Similar criticisms to the other program apply however. The presentation is fairly juvenile, though the work is quite advanced. The examples given are only cursory. The child has to work through three stages before the ZX printed certificate emerges.

Sadly, there are two major errors in this program. The examples give incorrect information about the punctuation of certain sentence structures, and this is further reinforced by the following exercises.

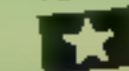
In addition, a bug appears to have crept into one of the exercise sentences. A vital word is missed out, leaving an incomplete sentence which can't be punctuated correctly. Until this is discovered the user cannot proceed.

Add to this a strange split layout of certain sentences, some of them excruciatingly contrived, and the result is not very good.

This program should be with drawn and reconsidered.

instructions	D.M.	95%
ease of use		60%
display		10%
value for money		

D.M.



Sticking by the TI

So Seg Gorham of Wakefield is dismayed by TI's withdrawal from the home computer market. I, in turn, am dismayed at his defeatist attitude. My advice is enjoy your machine to the full and ignore any criticisms of its capabilities.

I purchased our family 99/4A in October when the price usually came down to £90. Earlier in the year, which?, the Consumer Association Magazine, carried out a review of Home Computers. Two consistently came out as best value for money in all sections tested. These were the Atari 400 and Texas TI-99/4A.

The keyboard style, ability to accept cartridges and its very looks meant that to my mind the Texas was the only computer to go for. Neither I nor the rest of my family have been disappointed and by comparison I find the Spectrums, Commodores etc. of this world highly over-rated.

While production of the 99/4A has now ceased, there are literally hundreds of games and programmes available from the many software houses and distributors throughout the country, most of whom advertise in HCW. In addition, of course, HCW usually prints an excellent weekly 99/4A program, the transference of which to computer and cassette proves most exciting.

Peripherals are still fairly easily available, some from the most surprising of sources.

While I agree with Seg that the price of the computer will fall to £50 or so (it's already available for under £80 locally), the peripherals will also come down in price as the supplier seeks to turnover stock (e.g. Speech Synthesizer now £27).

Being unemployed, I can appreciate his difficulty in obtaining a loan to buy these extras. (I'm a bank manager myself) but would suggest that he chisel away bit by bit and keep in regular contact with the stockists advertising in this magazine to ascertain current prices. In addition, he might try joining a local or national TI user group.

I am sure he would be most surprised at the help and guidance available through such groups and I would suggest that such contact might prove most beneficial in expanding his existing system.

While I am a comparatively recent addition to the 99/4A users' family, I resent Seg's comment on the

Send your letter to Letters, Home Computing Weekly, No.1 Golden Square, London W1R 3AB. Don't forget to name your computer — the best letter could win £5-worth of software. Got a problem with your micro? We'll soon be starting a queries page, so send your technical questions to Queries at the above address



apathy of TI owners.

I agree that perhaps TI's marketing was inadequate and that the computing press in general has unfairly censored and ignored the machine. However, maybe we owners are the lucky ones in that we know and appreciate all its good points.

I am certainly not apathetic and will continue to enthuse about my 99/4A. Estimates of sales of 50,000 in the UK are I believe grossly understated. I would estimate double that number. There is still therefore a considerable market available for software houses who produce new and exciting games/problems.

We should all remember, however, that as technology continues its more and more rapid advancement, within five years even the nationally esteemed BBC micro will be totally out of date.

Such is life. No doubt by then even our family's 99/4A will have become yet another piece of attic junk. Meantime however we'll all continue to revel in the enjoyment it gives us.

On a separate matter, I find HCW's software reviews excellent. Having become a reader only in October however, there are obviously many reviews in earlier editions that I have missed.

Might I suggest a re-run of reviews for the best buys in software for say 1983 for not only the TI-99/4A but for other home computers also?

I am sure many other readers would appreciate this.

William Smith, Lasswade, Midlothian

We print an average of 35 software reviews a week — that's nearly 1,800 in a year — so the top 10 alone would fill about seven issues, with no room for anything else. Even divided by computer the space occupied in each issue would be too great to be justified.

We must confine ourselves reviewing new titles just available in the shops. However, our sister

magazine, a quarterly called Personal Software, does reprint reviews of the best software from HCW and our other computer magazines.

Each issue specialises and the next will be devoted to Sinclair computers, including software reviews, and is due on sale in four weeks.

High-score secrets 1

I am writing to inform you of some short-cuts to high-scores on I.J.K. Software's Zorgon's Revenge.

The easiest method is to let the freighters fly past you on the space mission and to just shoot the aliens to get points. This can, however, become a little tedious.

Another method is to shoot the freighter and, if you are on your last man, to then destroy your own space-craft. If you time this properly and your space-ship has half exploded when the magic stone materialises then you will find that no matter how many times you are killed, you will not end the game unless you repeat the process.

My final method for achieving high-scores is to use the jump facility to slow down lifts, lizards, bombs and birds.

Finally, one setback for all you high-scorers. When you complete the castle stage and rescue the princess the bonus is not added to your score! Is John S. Sinclair trying to diddle us?

S. Jeffery, Brackley, Northants

High-score secrets 2

After reading M. Brunning's letter (HCW 41), I thought I would tell you how to get a good start on the VIC-20's Rat Race, thanks to an apparent fault.

The third screen is a "speed run". This means that the mouse (you) goes faster and the rats (them) do not move at all, leaving you to eat the cheese.

If you fix it so that you end your game on this "speed run" then, when you start a new game, you will still go this same, fast speed, although you are no longer on a speed run. This results, as you might imagine, in you leaving the rats quite a way behind you.

This method is hard to set up, but pays off when you achieve it because it is nearly always possible to find the "two times" bonus cheese.

S. A. Paget, Lickfield, East

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RICHARD SHEPHERD SOFTWARE

Widows Revenge £6.99

Bubble Bus, 87 High St.,
Tonbridge, Kent TN9 1RX

The cassette card says quite simply: "Shoot everything that moves and everything that does not" That is good advice because this is a fast moving zap-it-up game.

Once the game is loaded there's screen of instructions and then a demo. You can select two players and play then switches between them after a loss of a life. This makes the game more competitive.

The "plot" is reasonably original. You can move around the bottom of the screen using the joystick

Black beetles crawling across turn suddenly and fire at you. If you hit them they turn to eggs, hit the eggs and they turn blue requiring several hits to exterminate. Very soon the screen is littered with crawling beetles and white and blue eggs

Occasionally the Black Widow spider appears and works it way to you. Hit it and you get a mystery score. While all this is going on an egg laying vulture is flying about. Definitely something to be avoided

I enjoyed this game, the graphics were good and the game original without being trite. L.C.

instructions	80%
playability	80%
graphics	70%
value for money	



Jumping Jack £8.95

Livewire, 198 Deansgate,
Manchester M3 3NE

This game will appeal to those frog-squashing freaks who put 10 pence into Frogger in their spare time. Jumping Jack goes one step further than Frogger — you are playing with 3-D graphics

You have to manoeuvre a small green frog from one side of the screen into one of the bays at the other side within a time limit. On the way you must dodge traffic on the road and hop between logs and turtles on the river.

Further difficulties are getting the lady frog across avoiding snakes, crocodiles, sinking turtles, etc.

The graphics use full colour and on a colour TV set are

excellent. On a black and white set some shades of grey blend. A typical case is logs and water. This is unfortunate. The game is still playable although not quite as good.

Viewers of Take Hart (BBC1) will recognise the background tune. Sound is good — no faults at all here.

The game allows you to control nearly all aspects of play by a selection of key presses and screen displays. Joystick is optional

As a final extra buyers are entitled to enter a high-score competition with a CMB-1541 disk drive as first prize. K.I.

instructions	80%
playability	85%
graphics	85%
value for money	85%



Kick-off £6.99

Bubble Bus, 87 High St.,
Tonbridge, Kent TN9 1RX

Quite a good attempt at simulating the table soccer game that simulates football

The game is the one where all the men are fixed on rods across the table. By moving the rods and spinning the men you can "kick" the football into a goal, usually your own

The screen display gives a good representation. Two players can take part, each using a joystick, or the keyboard and one joystick. Moving the joystick allows you to move from rod to rod and to move the rod up or down. Pressing the fire button spins the men

I found it very difficult to

control the action. You lose something by only having a two dimensional picture. In playing the real table-top version the timing and positioning of the feet of the players is critical. In this simulation a lot of the feel of the game is lost.

The best bit is the introduction. It displays a crowd at a stadium complete with adverts for Bubble Bus and plays a very catchy tune that makes good use of the 64's sound facilities. In fact I had the tune playing longer than the game

I would rather put the money towards an original table top football game. L.C.

instructions	60%
playability	40%
graphics	60%
value for money	50%



MORE FOR YOUR 64



Face Ache £5

Commodore, 675 Ajax Ave.,
Slough, Berks SL1 4BG

This game is most likely to appeal to very young children. The inlay card giving the playing instructions is over the top in jokiness. After the big build up the game itself is a bit of a let down

It consists of assembling an Identikit picture to recreate a face displayed on the screen for 30 seconds. You have one minute to select the correct hair style, eyes, nose, mouth and chin. When the minute is up the original face is displayed again and each feature is marked correct or wrong in a listing on the screen. You score 10 points for each correct feature

The scoring when you repeat the game is cumulative so unfortunately you can't play

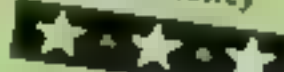
against another person with the highest score to date displayed. To compete with another you would have to have, say, five goes each and note your final scores

The graphics seem a mixture of old fashioned PET black graphic symbols and maybe high resolution. The effect is bizarre but perhaps this was intentional to create funny faces

One odd point in the instructions is to "turn up your volume". As far as I was concerned there were no sound effects. All I heard with the volume right up was background noise

Not a very inspiring game but it might amuse those who watch Play School.

instructions	L.C.
playability	50%
graphics	40%
value for money	50%



Gridtrap £8.95

Livewire, 198 Deansgate,
Manchester M3 3NE

Based on what seems to be an original theme, the object of Gridtrap is to get to each of five bombs before they explode, without back-tracking on yourself

To bar your way there are boots which wander around the grid, and skull and cross bones occupying various positions. You may move in four directions, leaving a trail behind you, but you may not cross this trail

You get extra points for collecting the flags which are situated in various grid positions and for getting to the bomb on time. You lose a life if you move

onto a skull and cross bones or cannot get to the bomb.

The graphics are quite good although perhaps light colours are used too much. This looks slightly unclear with a black background. The sound is average. Fortunately it is possible to turn off the irritating background noise

The game offers you plenty of control over the playing options, via control screens and selection keys

If you feel confident about your high-score you may enter a competition by sending off your 'magic high score number' with your name and address. K.I.

instructions	70%
playability	80%
graphics	80%
value for money	80%



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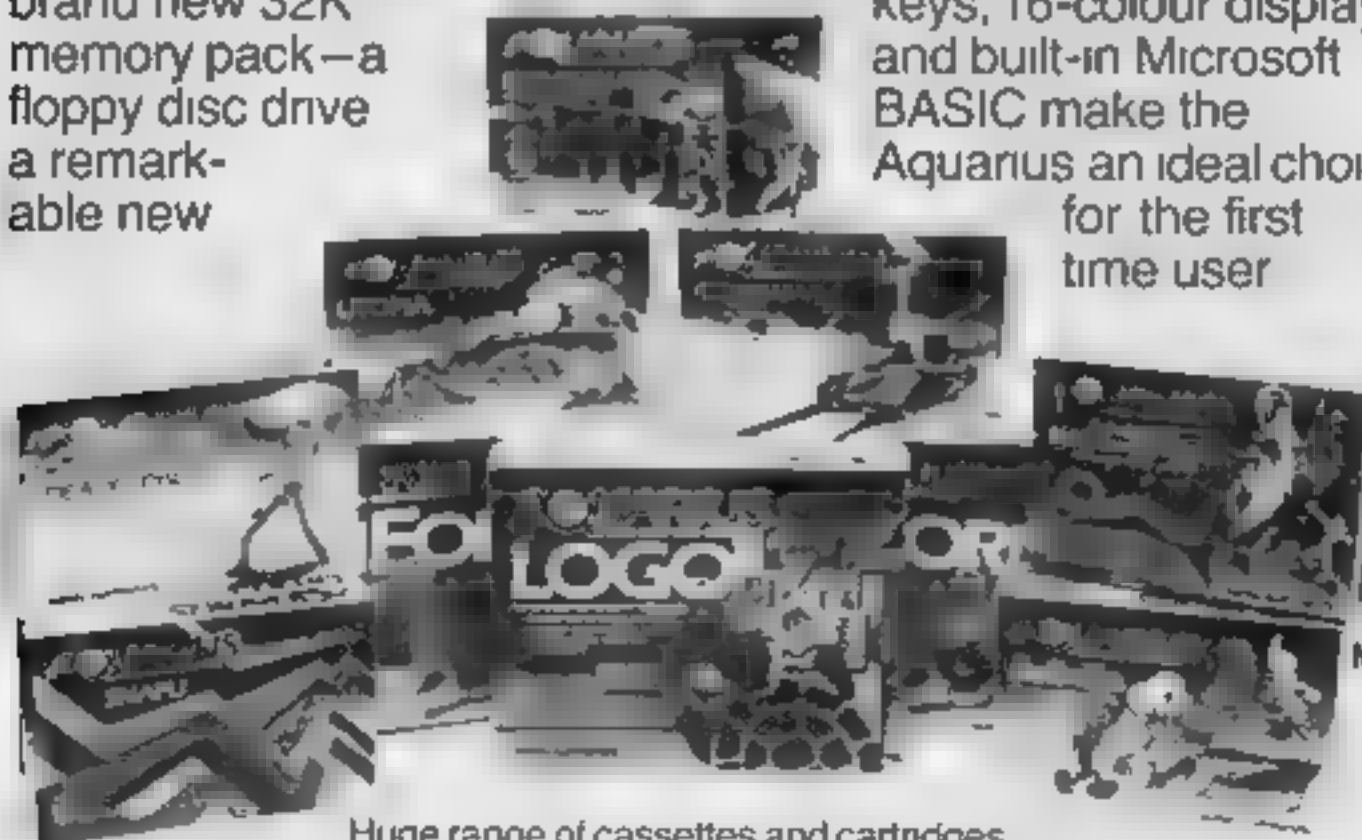
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BEST SELLERS

Top Ten programs for the Dragon

1	Dragrunner	Cablessoft (-)
2	Cave Fighter	Cablessoft (-)
3	Cuthbert in the Jungle	Microdeal (-)
4	UGH	Softtek (-)
5	Skramble	Microdeal (-)
6	Ring of Darkness	Wintersoft (7)
7	Frogger	Microdeal (-)
8	Space fighter	Microdeal (-)
9	Pinball	Microdeal (-)
10	Dragon Hawk	Microdeal (-)

Top Ten programs for the VIC-20

1	Arcadia	Imagine (1)
2	Gridrunner	Llamssoft (3)
3	Wizard and the princess	M.House (5)
4	Crazy Kong	Interceptor (-)
5	Abductor	Llamssoft (-)
6	Golf	Audiogenic (-)
7	Plague/ Alien Demon	K-Tel (10)
8	Junior Maths and engine shed	Commodore (-)
9	Special Pack 11	Commodore (-)
10	Grandmaster Chess	Audiogenic (-)

Top Ten programs for the Commodore 64

1	Hover Bover	Llamssoft (9)
2	Grandmaster	Audiogenic (-)
3	Matrix	Llamssoft (-)
4	Gridrunner 64	Llamssoft (10)
5	Introduction to Basic	Commodore (6)
6	Attack of the Mutant Camels	Llamssoft (7)
7	Arcadia	Imagine (-)
8	Goodness	Beyond (-)
9	Gracious	Interceptor (1)
10	Frogger	Audiogenic (4)
	Motor Mania	

Top Ten programs for the Spectrum

1	Atic Atac	Ultimate (1)
2	Jetpac	Ultimate (9)
3	Pyramid	Fantasy (3)
4	Kong	Ocean (-)
5	Ant Attack	Quicksilver (5)
6	Penetrator	M.House (6)
7	Alchemist	Imagine (4)
8	Lunar Jetman	Ultimate (2)
9	Pool	CDS (8)
10	Harrier Attack	Darrell (-)

Top 30

1	Hunchback	Ocean	Spectrum (5)
2	Manic Miner	Bug-Byte/ Software Projects	Spectrum (1)
3	Harrier Attack	Durrell	Spectrum (15)
4	Lunar Jetman	Ultimate	Spectrum (8)
5	Jetpac	Ultimate	Spectrum (4)
6	The Hobbit	M.House	Spectrum (2)
7	3D Ant Attack	Quicksilver	Spectrum (6)
8	Kong	Ocean	Spectrum (7)
9	Zzoom	Imagine	Spectrum (9)
10	Falcon Patrol	Virgin	CBM 64 (13)
11	Penetrator	M.House	Spectrum (-)
12	The Hobbit	M.House	CBM 64 (10)
13	Atic Atac	Ultimate	Spectrum (19)
14	Valhalla	Legend	Spectrum (3)
15	Horace goes Skiing	Psion/ M.House	CBM 64 (14)
16	Cuthbert in the Jungle	Microdeal	Dragon (18)
17	Chequered Flag	Psion	Spectrum (26)
18	The King	Microdeal	Dragon (17)
19	Digger Dan	Ocean	Spectrum (-)
20	Chuckie Egg	A&F	Spectrum (28)
21	Arcadia	Imagine	VIC-20 (-)
22	Mini-Kong	Anirog	VIC-20 (-)
23	Hunchback	Superior	BBC (12)
24	Hover Bover	Llamssoft	CBM 64 (-)
25	Jetpac	Ultimate	VIC-20 (29)
26	Scrambler	Solar	VIC-20 (-)
27	Mined Out	Quicksilver	BBC (-)
28	Crazy Kong	Interceptor	CBM 64 (-)
29	Twin Kingdom Valley	Bug-Byte	VIC-20 (30)
30	Snooker	Visons	VIC-20 (-)

Compiled by PCS Distribution(0254 691211) and sanctioned by the Computer Trade Association. Chart is for retail sales in individual outlets in the UK and Northern Ireland

Top Ten programs for the ZX81

1	Flight Simulation	Sinclair (-)
2	Football Manager	Addictive (-)
3	Crazy Kong	PSS (9)
4	Geography	Sinclair (-)
5	Maths	Sinclair (-)
6	History	Sinclair (-)
7	Hopper	PSS (-)
8	ZX Forth	Sinclair (-)
9	English Lit 1	Sinclair (-)
10	ZX Debug	Bug-Byte (-)

SPECTRUM SOFTWARE REVIEWS

Atic Atac 48K £5.50

Ultimate, The Green, Ashby de la Zouch, Leics. LE6 5JU

From ghoulies and ghosties and long leggedy beasties and things that go bump in the night, Good Lord deliver us

The old Scottish prayer will need a few additions before you play Atic Atac.

The graphics are extremely good and fast moving as, using keyboard or joystick, you roam a haunted castle looking for the Golden Key before escaping I very much like the smooth way in which you move between the many cellars and rooms and the various beasties materialise in a very convincing way. My own favourites were the witches and the Red Devil (a Manchester United supporter?) in the cellar.

You take the character of either a knight, a serf, or a wizard each of whom has different weapons and access to separate secret passages. As you progress you find food and other useful objects.

The screen displays time elapsed, points scored and swag collected at the side of the main game display which has a 3D effect.

Great fun to play. Each game is different enough to maintain interest. Ultimate warn that due to the game's complexity continuous error-free operation cannot be guaranteed, but I had no problems. **D.J.**

instructions	80%
playability	85%
graphics	95%
value for money	80%



Games for a laugh

Our reviewers are difficult to please, but these five Spectrum games all rate four stars or more

Freez 'Bees 48K £5.95

Silversoft, London House, 271/273 King St, London W6

Freez 'Bees is a sort of Pac-Man on ice, which I suppose is appropriate for this time of year. Percy Penguin is being chased by snowbees! The bees look a little like squashed tomatoes to me and apparently they kill penguins.

Having loaded the tape, I decided to wait for a demo, as promised on the cassette insert, but none was forthcoming, despite waiting a long time, followed by desperate prods at the keyboard. If there is a demo mode, I certainly cannot find it.

The object of the game is for Percy to squash the snow bees by

pushing ice blocks at them. But while Percy is doing this, more are hatching from eggs in the ice-blocks and it's only a matter of time before Percy goes up to the big North Pole in the sky.

Freez 'Bees — playable with keyboard or Kempston joystick — has nine skill levels, high score and hall of fame and many different icefields. Graphics and sound effects are excellent and the game is absorbing enough for one to while away a few hours. **M.B.**

instructions	40%
playability	80%
graphics	90%
value for money	90%



Android 2 48K £5.95

Vortex, 280 Brooklands Road, Manchester M23 9HD

This is the first game I have seen from this company and, after playing it, I hope it will not be the last.

Written in 100 per cent machine code, Android 2 is an arcade game that would put many of the games you find in arcades in the shade. The action takes place in three different settings: the death maze, the paradox zone and the flatlands. It is your job to guide the Android to kill five Militoids in each of these sections. It's not as easy as it sounds, as there are landmines and other aliens about some of which cannot be

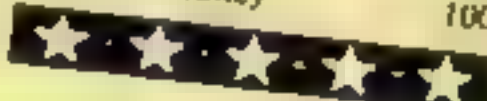
destroyed and must therefore be avoided.

The superb 3D effect in the maze and what Vortex call "three-screen multi wrap around", gives an impression of vastness which I certainly have not seen on any other game.

Although there is only the one difficulty level, this seems to have been pitched just right — difficult enough to frustrate but not so that you want to quit.

I don't know what to expect in the other two zones yet but I will play this game until I find out. **N.B.**

instructions	95%
playability	100%
graphics	100%
value for money	100%



De-Fusion 48K £5.50

Lydenhurst, 38 Ashley Road, London N19

Infuriating and addictive for the same reason — I can't do it! A simple idea: guide Happy Larry to ticking bomb before its counter reaches zero or die in a spectacular explosion.

The screen display is alternate green squares, erased as you travel, with Demon Skulls (avoid) and flags (extra points) scattered around, plus a mobile purple Bover Boot, determined to stomp you. Defuse Bomb One and the next appears, usually in the most inconvenient place.

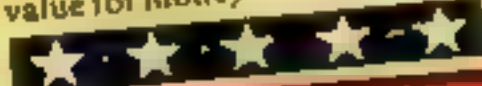
You can travel off-screen and reappear the opposite side, but only if there is a green square left to receive you.

Keys J and K reprint squares to left or right, when desperate, but helps Boot. Clearing four bombs reaches screen two — two Boots to contend with! How many bombs in this screen, or how many more screens I can't say because the Terrible Twins catch me every time!

Keys A, Z, N and M cover directions and Kempston joystick is supported. Insert instructions are concise, typeface readable and the program tests for the correct LOADING volume.

A most professional product. If I can stop playing this, I shall be looking out for other Lydenhurst programs. **D.C.**

instructions	95%
playability	95%
graphics	100%
value for money	



Star Trek 48K £7.95

Mikro-Gen, 24 Agar Crescent, Bracknell, Berks

The multi-versioned Star Trek has been around for light years, but will be new to thousands of new Spectrum owners. You patrol, in the USS Enterprise, an eight by eight grid of space quadrants on a Klingon search and destroy mission.

You may jump up to six quadrants, in any direction, by inputting course and warp speed and travel quadrants by impulse power in the same way.

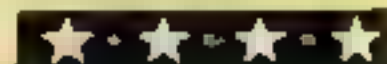
A short and long range scanner reveal friends and enemies in the current and surrounding quadrants; phasers, photon torpedoes and one anti-matter bomb provide armament and

shields give defence.

This version offers a good "operating manual", very detailed damage and status reports; and a choice of star systems, increasingly difficult in terms of Klingons and time allowed. Failure rates "intergalactic cook" — success could lead to my rank of Adjutant First Class.

The help command produces an abort situation, forcing you to wait for mission time to elapse. I disliked unreadable red on dark blue reports and incomprehensible "Status 0.00 4" messages and no LOAD instructions but graphics and sound effects are first class. **D.C.**

instructions	80%
playability	90%
graphics	90%
value for money	75%



'Save as you learn' software scheme

I am always on the lookout for new, significant and especially low cost educational programs. This week I can tell you about some that are all three at the same time.

Would you buy more educational programs if they were worthwhile and only cost \$10 a piece? That is what School and Home CourseWare is hoping that many schools and individual users will be doing this year. By subscribing to its Software Library Series, purchasers can receive 10 programs for \$99.95 during the upcoming school year. The Mastery Software line includes 60 new packages for the Apple, PET, Commodore 64, TRS-80 and Atari computers.

If purchased in single quantities, the programs would cost \$24.95 each, so subscribing can amount to quite a saving. The subject matter in the Mastery series is sub-divided into five categories: elementary maths, intermediate maths, elementary reading/English, intermediate reading/English, and general curriculum. All purchasers receive a 30-day money back guarantee.

Conduit, a non-profit corporation that publishes educational software, has made educators an offer they should not be able to refuse. Due to a donation of 5,000 5.25in floppy discs from Verbatim Corp., Conduit is distributing samples of various programs on demo discs to colleges, computer-education groups and school teachers. The programs are portions of Conduit software on various subjects including chemistry, foreign languages, English, biology, and learning games.

Apparently the firm has already given away over 1,000 sample discs at an educational computer conference and definitely considers this program to be a success. If you are an educator, send some proof of that plus (at least) \$2 to cover postage and handling to receive a copy of the demo disc — if there are still some left. You can check and get details from Conduit, P.O. Box 388, Iowa City, IA 52244. Happy sampling.



Here's an update on a survey first reported here last spring. Forget about Saturday Night Fever, it's time for Computer Fever. According to the reporting firm, Teen-Age Research Unlimited of Lake Forest Illinois, roughly five per cent of the 1,500 teens surveyed bought a home computer in the last year, which is about three per cent more than did in the previous survey. About 10 per cent indicated that they had spent some time with a computer in the previous week. Approximately one and one half times as many boys use computers than girls. About 11 per cent of those teens surveyed indicated that they were planning to buy a computer in the next year. When asked how they might spend an extra \$50, roughly 11 per cent indicated that they would buy computer programs and cassettes.



Remember a while back I mentioned that American television was about to have inflicted on it a show called Whiz Kids which would feature a bunch of computer-using kids fighting crime by the use of their wits rather than fists? Well it has been on since late September, and it is hard to call the show a success.

I suppose I should not admit this, but I have never watched it, not being much of a vidiot. However, the show is reported to have a 12 rating on a 20 share, which in English means that 12 per cent of all households were watching the show and that 20 per cent of all sets on at the time were tuned to the show. However, the 12-20 rating is nothing to get all that excited about. In fact it is likely that if the show's ratings do not improve, it will be cancelled.

One of the "kids" is actually a computer buff already and is in the process of designing an adventure game for resale. He is hoping that if the series doesn't do well he will still have his game royalties to fall back on. If the LA-based software company, called Mind Games, releases a game called Desecration, you'll know who wrote it — Jeffrey Jacquet of Whiz Kids fame.

Too little too late dept. Just off the press, and just what we need: A firm called FlipTrack Learning System has just released a product recorded on audio cassette called How to Operate the TI-99/4A. Clearly, the company was working on the final product when TI announced it was getting out. Oh well, can't win 'em all. In case you can't wait to buy one, the tape costs all of \$16.95. Perhaps FlipTrack will do better with their audio lessons on How to Operate the Commodore 64. That tape costs \$29.95. FlipTrack is based in Glen Ellyn, Illinois. Write soon before they run out of the TI version (excuse me while I remove my tongue from my cheek).



Word Wizard is a new word processor I have been learning about for the VIC-20.

It comes on a cassette and can store data files on either tape or disc in the same format that is used by the WordPro business word processors which run on the larger Commodore machines. The advantage of this is obvious.

The text editor is very easy to use and takes good advantage of the special function keys. In fact, the editor uses the edit keys in exactly the same way as does Commodore with respect of programming in BASIC. Using the program is made easier due to the inclusion of a template that fits over the function keys and indicates what each does when pressed.

I feel the major drawback of this program is its inability to link files after they are created. This means that it will be difficult to create long document without lots of thought as to where to insert page breaks. If what you want, however, is something that will serve primarily as a tool to help you write letters, homework, short term papers and so forth, this program may serve you quite well. The documentation that accompanies the program is quite short (about 16 pages) but it is clear and full of examples.

Another drawback is the fact that the program must always be loaded from tape, a slow process indeed. I am not enough of a VIC expert to know if it could be uploaded to disc, but I would imagine this would not be very difficult to accomplish. The program is very "goof proof", its reviewer could not force it to fail although he tried.

Compare this program to your first typewriter, it works, it is simple, inexpensive, and a whole lot faster than doing it by hand! List price is \$34.95, requires a VIC-20 with at least 8K RAM. Available from Computer Applications Inc., 13300 SW 108 Street Circle, Miami, Florida 33186, (305) 385-4277.



In the market for a good low cost printer? Epson has been introducing a lot of new printers lately, and changing the prices of many of their current models. Perhaps this should clear up some of the confusion. There are now the models MX-80, MX-80F, MX-100, RX-80, RX-80F, FX-80, and FX-100. As you can see, there are three basic groups: MX, RX, and FX. The difference is mainly in speed. The MX series print at 80kps, the RX at 100kps, and the FX at 160kps.

The MX-80 and RX-80 have 80 column capabilities and tractor feed, but not friction feed. This means that you cannot use single feed (e.g. for letterheads). The FT indicates the presence of both friction and tractor feed ability. The MX-100 is just the same except with 15" wide carriage, enabling it to print more than 80 columns. No RX-100 has been announced as yet.

The FX-80 is also just 80 column printer but it has both friction and tractor feed. The tractor feed has a limited adjustment range from 8" to 10". An extra cost tractor is available to allow it to adjust down to 4". The FX-100 is just like the MX-100 but prints up to twice as fast.

That's it for now. See you next week.

Bud Izen
Fairfield, California

Fed up with slow TI games? This one's really fast

How it works

- 10-90 initialises variables, set up screen, print titles
- 100-310 main loop to move copter
- 320-350 check if copter has hit building
- 360-550 screen set up, define characters, set colours
- 570-610 print buildings in random positions
- 640-650 set up heading, GOSUB to print it
- 690-790 FOR...NEXT loop for bomb etc
- 810 explosion if copter hits building
- 820-830 print explosion
- 880-890 check if bomb has hit a tower
- 910-920 bomb explodes on tower
- 1000-1210 copter crashed — game ends
- 1220-1250 print headings
- 1300-1500 success — game ends
- 1350 calculate score dependent on level and bombs left
- 1420-1440 bonus score
- 1760-1820 high-score routine

Oh, no! you may say — not another version of Bomber! But this one is different.

I was fed up with slow BASIC games and since I liked the idea of Bomber I decided to write my own version and to make it run much faster than those I had seen.

Clever programming has squeezed more speed out of the standard TI-99/4A. Gareth Thomas explains what he did and how to play the game

```

10 REM CRAZY COPTER
20 REM FOR H.C.W
30 REM BY GARETH THOMAS
40 DEF RND(A)=INT(RND*A)+1
60 BST=0
70 NB="G.T."
80 SC=0
90 GOSUB 1520
100 GOSUB 370
110 GOSUB 140
120 REM MAIN LOOP
130 REM MOVE COPTER
140 CALL KEY(0,Y,A)
150 IF A=0 THEN 140
151 CALL HCHAR(4,2,32,28)
160 FOR Y2=2 TO 22
170 FOR Y2=3 TO 30
180 CALL KEY(0,Y,A)
190 IF A=1 THEN 200 ELSE 220
200 IF BMS<1 THEN 220
210 GOSUB 670
220 CALL HCHAR(X2,Y2-1,32)
230 CALL HCHAR(X2,Y2,103)
240 IF X2>12 THEN 220

```

The result even surprised me as it's quite fast.

I have used many techniques to speed up the program, using as few IF...THEN statements as possible and only one random number generator (as a user-defined function)

Nested FOR...NEXT loops move the copter, eliminating the need to test whether it is off the screen. These are also much faster than C=C+1 and IF C<10 THEN and so on

The program is also structured as far as is possible

The game itself is slightly different from the familiar version

You are carrying thermodynamic bombs to an air force base when you start to lose height off the city and have to bomb the buildings to clear a safe landing area

But the bombs are old and unstable and may explode without hitting anything which can be quite frustrating

Sometimes a building will have to be bombed twice to destroy it totally

Any key may be used to drop the bombs, there is a bonus system if a screen is cleared, a high-score routine and a level selection at the beginning

Good luck

```

250 NEXT Y2
260 CALL HCHAR(X2,Y2-1,32)
290 NEXT X2
300 GOSUB 1260
310 GOTO 80
320 REM CHECK FOR HIT
330 CALL GCHAR(X2,Y2+1,A)
340 IF A=151 THEN 360
350 GOTO 250
360 GOSUB 810
370 RANDOMIZE
380 REM SET UP SCREEN
390 CALL CLEAR
400 CALL COLOR(16,1,1)
410 CALL COLOR(14,2,5)
420 CALL SCREEN(6)
430 CALL VCHAR(1,32,155,24)
440 CALL VCHAR(1,1,155,24)
450 CALL VCHAR(1,31,155,24)
460 CALL COLOR(1,5,5)
470 CALL COLOR(15,2,16)
480 CALL COLOR(13,3,5)
490 CALL COLOR(10,14,5)
500 CALL COLOR(9,11,5)
510 CALL CHAR(151,"FF95FFA9FFA5FFA1")
520 CALL CHAR(129,"FFFFFFFF00000000")
530 CALL CHAR(143,"00000000000000A10")
540 CALL CHAR(104,"49AA3C5F389310")
550 CALL CHAR(103,"007F0000FFD1F")
560 REM PRINT BUILDINGS
570 CALL HCHAR(23,3,129,27)
580 FOR G=3 TO 29
590 A=RND(A)
600 CALL VCHAR(23-A,G,151,A)

```

```

610 NEXT G
620 X=1
630 Y=3
631 PS=0
640 NB="CRAZY COPTER"
650 GOSUB 1270
651 PS=PS+3
652 NB="Press any key to start"
653 GOSUB 1220
660 RETURN
670 BMS=BMS-1
680 REM DROP BOMB
690 FOR X3=X2+2 TO RND(10)+11
700 IF X3>12 THEN 800 ELSE 710
710 CALL HCHAR(X3-1,Y2-1,32)
720 CALL HCHAR(X3,Y2-1,103)
730 NEXT X3
740 CALL SOUND(-600,-6,0)
750 CALL HCHAR(X3-1,Y2-1,104)
760 FOR D=1 TO 100
770 NEXT D
780 CALL HCHAR(X3-1,Y2-1,32)
790 CALL VCHAR(X3,Y2-1,32)
800 RETURN
810 CALL SOUND(1500,-7,0)
820 CALL HCHAR(X2,Y2,104)
830 CALL HCHAR(X2,Y2+1,32)
840 FOR D=1 TO 400
850 NEXT D
860 CALL HCHAR(X2,Y2,32)
870 GOSUB 1000
880 CALL GCHAR(X3,Y2-1,B)
890 IF B=151 THEN 910
900 GOTO 710
910 CALL SOUND(600,-6,0)

```

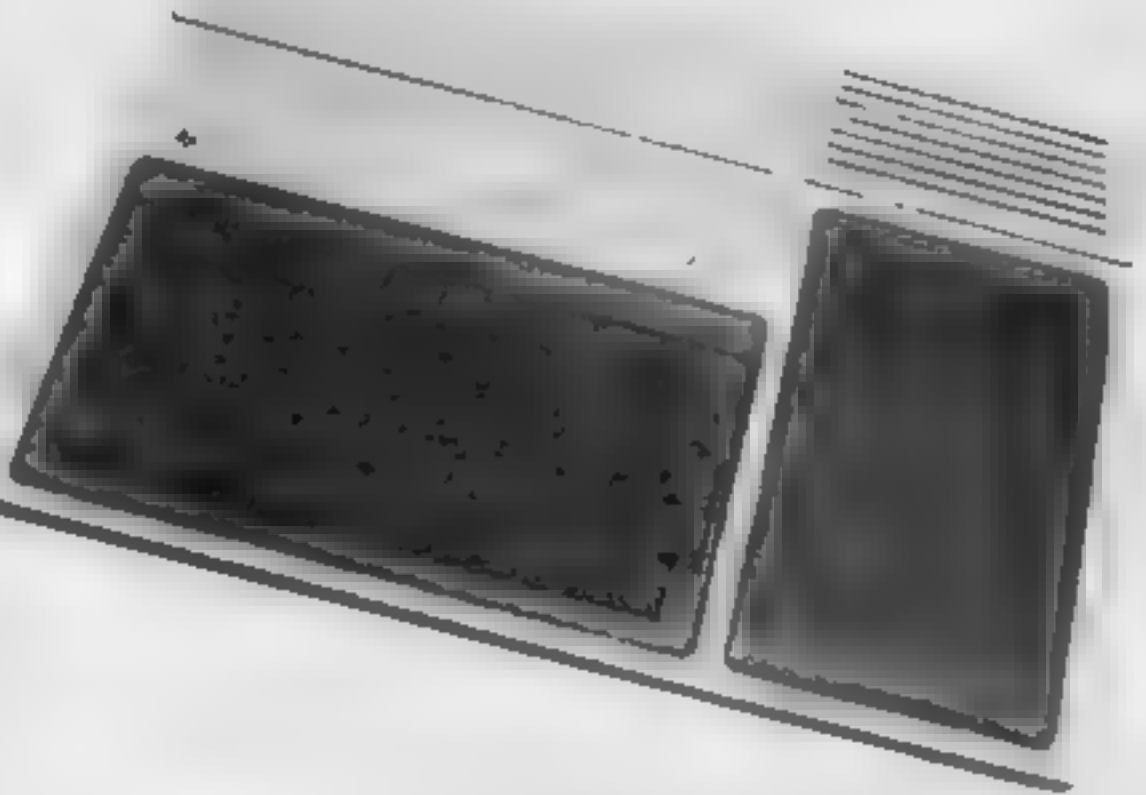
TI-99/4A PROGRAM

```

920 CALL HCHAR(X3-1,Y2-1,104)
930 FOR D=1 TO 100
940 NEXT D
950 ER=RD(5)
960 CALL VCHAR(X3,Y2-1,32,ER)
970 SC=SC+ER
980 CALL HCHAR(X3-1,Y2-1,32)
990 RETURN

1000 CALL SOUND(500,150 0)
1010 CALL SOUND(1000,110 0)
1020 GOSUB 1070
1030 CALL CLEAR
1040 CALL SCREEN(2)
1050 FOR COL=1 TO 9
1060 CALL COLOR(COL,16,2)
1070 NEXT COL
1080 SC=(SC+BMS)*4
1090 IF SC>BST THEN 1100 ELSE 1120
1100 BST=SC
1110 GOSUB 1760
1120 PRINT TAB(2) "BAD LUCK YOU CRASHED"
1130 PRINT TAB(2) "YOU HAD",BMS,"BOMBS LEFT"
1140 PRINT TAB(4) "YOU SCORED " SC
1150 PRINT
1160 PRINT "BEST SCORE IS",BST B: " NB
1170 PRINT
1180 PRINT "PRESS ANY KEY FOR NEW GAME"
1190 CALL KEY(0 K)
1200 IF S=0 THEN 1190
1210 GOTO 90
1220 FOR T=1 TO LEN(M$)
1230 CALL HCHAR:PS+1 Y+T ASC(LEFT$(M$,T))
1240 NEXT T
1250 RETURN
1260 FOR T=1 TO 10
1270 READ P
1280 CALL SOUND(-200 P B P+1 0)
1290 NEXT T
1300 CALL CLEAR
1310 CALL SCREEN 2
1320 FOR COL=1 TO 9
1330 CALL COLOR(COL,16,2)
1340 NEXT COL
1350 SC=(SC+BMS)*4
1360 IF SC>BST THEN 1370 ELSE 1390
1370 GOSUB 1760
1380 PRINT TAB(2) "WELL DONE!!"
1390 PRINT TAB(2) "YOU HAVE TODAY'S BEST SCORE"
1400 PRINT TAB(2) "PLEASE ENTER YOUR NAME"
1410 PRINT
1420 BOM$=PC(500,100)
1430 PRINT TAB(2) "YOU RE ENTER NAME IF YOU"
1440 SC=SC+BOM
1450 BST=SC
1460 PRINT
1470 PRINT TAB(2) "PRESS ANY KEY TO PLAY AGAIN"
1480 CALL KEY(0 K)
1490 IF S=0 THEN 1480
1500 RETURN
1510 DATA 300,400,500,600,500,400,300,200,600,200
1520 CALL CLEAR
1530 CALL SCREEN 2
1540 FOR COL=1 TO 9
1550 CALL COLOR(COL,8,2)
1560 NEXT COL
1570 PRINT TAB(4) "C O R A Z Y C O P T E R "
1580 PRINT TAB(3) "PRESS -
1590 PRINT TAB(4) "1)FOR 200 BOMB
1600 PRINT TAB(4) "2)FOR 150 BOMB
1610 PRINT TAB(4) "3)FOR 100 BOMB"
1620 PRINT TAB(4) "4)FOR 75 BOMB"
1630 CALL KEY(0 K S)
1640 IF S=0 THEN 1630
1650 L=K-48
1660 IF (L<1)+(L>4) THEN 1630
1670 ON L GOTO 1680,1700,1710,1740
1680 BMS=200
1690 RETURN
1700 BMS=150
1710 RETURN
1720 BMS=100
1730 RETURN

```



```

1740 PEN HIGH SCORE
1750 RETURN
1760 CALL SOUND(1000,300 0 400 0,500 0)
1770 PRINT TAB(2) "WELL DONE!!"
1780 PRINT TAB(2) "YOU HAVE TODAY'S BEST SCORE"
1790 PRINT TAB(2) "PLEASE ENTER YOUR NAME"
1800 INPUT N0
1810 PRINT
1820 RETURN

```

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Games: an addict's confession

A man, let us call him Mr ZX, sits alone in a darkened room, staring vacantly at the corner TV set. A machine is sitting on the coffee table in front of him and his index fingers stab at it compulsively.

To look at, Mr ZX is a wreck. Grubby clothes hang from his emaciated frame. His eyes are sunken and without expression. His cheeks are hollow. Several days' growth of unkempt beard covers his chin.

Mr ZX was once a successful businessman. Now, like thousands of others, he is a computer games addict.

"It began in the early 70s," he said "I bought a pocket calculator. No harm in that. I could work out the family budget and the accounts in the office. Then, one terrible day, I found I could make up words if I turned it upside down.

"That wasn't too bad to start with; just a laugh in the office. But then I found I was laying under the bedcovers at night trying to think up new words. 'Hello' and 'O Hell' just wasn't enough.

"In those days I still had some willpower and I didn't replace the batteries when they ran down. I had a few withdrawal symptoms and my wife suggested a break at the seaside.

"It was a big mistake. We went to Blackpool and, like everyone else, toured the amusement arcades. There was a game where you had to knock a ball across a TV screen. I dumped the family and spent all our holiday money on it.



"Eventually we got home and I stayed in all the time. I started smoking. It was coming up to Christmas when I started to get better. I felt well enough to go shopping. It's a pity I recovered.

"They were selling those games in the shops. I bought one. I told my wife it was for the kids, but I could see she didn't believe me.

"She was right, of course. The kids never got a look in. I used to send them to bed and sit up all night playing this game. It wasn't easy, either. It really needs two players.

"Then along came Clive Sinclair. I bought one of his computers. I couldn't believe all the games I could play in the privacy of my own home. I still used to go out for a while: to buy computer magazines. Now I get all my games by mail order. I never see the light of day.

"My wife took the kids back to her mother's about six months ago. I've lost my family. I've lost my business. I've lost everything I ..."



He broke off at this point and I wouldn't get him to talk any more. I sat with him for a while as he waited for another game to load into the computer. Then I left.

I looked back at the door, just as he executed a neat dart to the left, dodged the enemy lasers and shot the mothership for a surprise bonus.

Nick Morloch

● This space is for you to sound off about the micro scene, to present bouquets, to hurl brickbats, or just to share your opinions or experiences. Contributions from individuals earn a fee. Send your views to Paul Liprot, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB.

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Stop searching and start playing

If your collection of albums needs to be brought to order, you need my record library program.

It runs on the VIC-20 with a minimum of 8K of expansion and you use it to build a file

All you do is enter the names of artist and album and the album tracks. You also have to give the number and side of the data cassette you are using for storage.

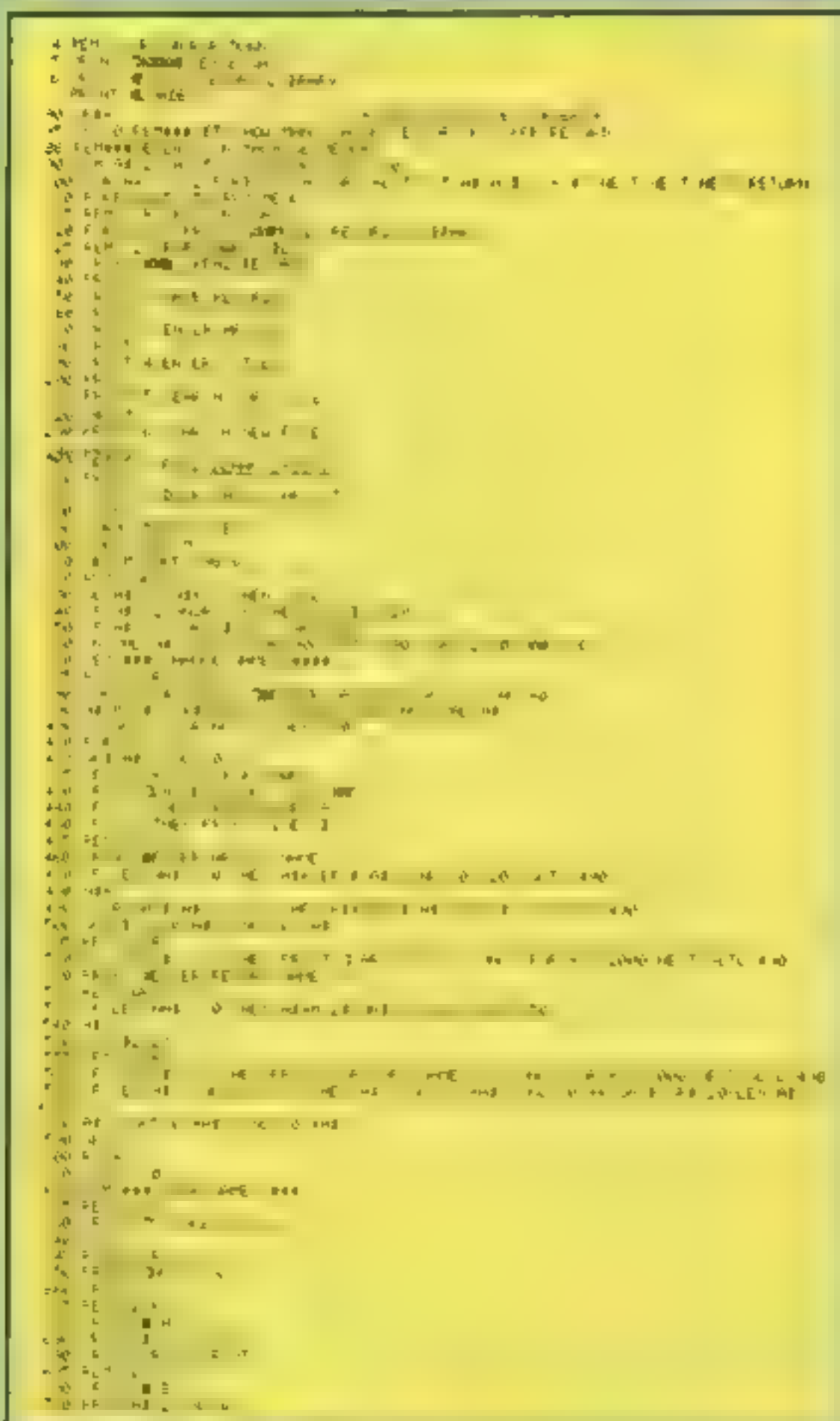
How it works

- 4-7 wait message
- 80-100 set up
- 110-360 display menu
- 370-610 routine to enter/amend artists' and album names on selected cassette number
- 620-790 display artists' and album names on sides A and B of cassette numbers 1-X
- 800-890 search for blank cassette number in a file, display number
- 900-1110 SAVE data to tape
- 1120-1180 warning routine — comes into action if you select option 2, SAVE RECORDS. When you have either not LOADED a file from cassette or not yet created a file in memory
- 1190-1380 LOAD data from tape
- 1390-1650 change or create titles to selected cassette number
- 1660-1790 search for track name
- 1800-1940 display any match
- 1950-2100 screen pattern before displaying match
- 2120-2210 set up computer with new file in memory
- 2220-2350 input routine. Note: cursor here is a left arrow
- 2360-2410 change border colour while menu is on display
- 2420 line used to SAVE program to tape

Here's how to record details of your albums:

- Select option 7, START A NEW FILE, from the menu
- Option 3, ENTER ARTIST. First type in the number of the blank data cassette, then artist name for side A followed by album name for side A. Do the same for side B
- Option 4, ENTER TITLES. Type your data cassette number again, followed by side A or side B and then all the titles on the album — you are allowed a maximum of 15
- Option 2, SAVE RECORDS. Insert your data cassette into the

End the hunting for your favourite album tracks. Let John Ingham's program do the looking for you. It needs a VIC-20 with at least 8K of expansion RAM



Variables

- SP\$ space filler
- V sound volume when LOADING and SAVING data
- S2 sound
- SC screen/border colour
- CA important, sets up how many cassettes on each file
- RL% flag to check if any data is in memory
- S% cassettes sides A or B
- FL% flag to check for cursor keys pressed
- POKES: 198,0 clears keyboard buffer; 36865,X sound effects

recorder and, using the counter, ensure you leave a gap of 100 digits between each album file. When ready, press RETURN and your file will be SAVED onto the tape

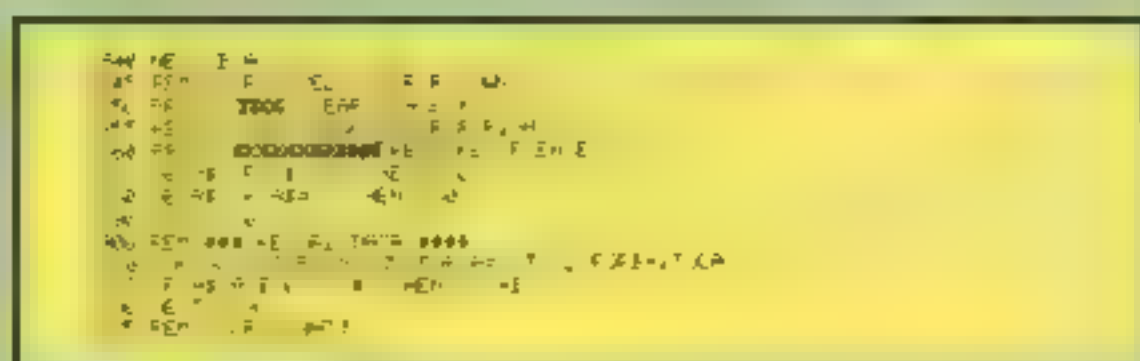
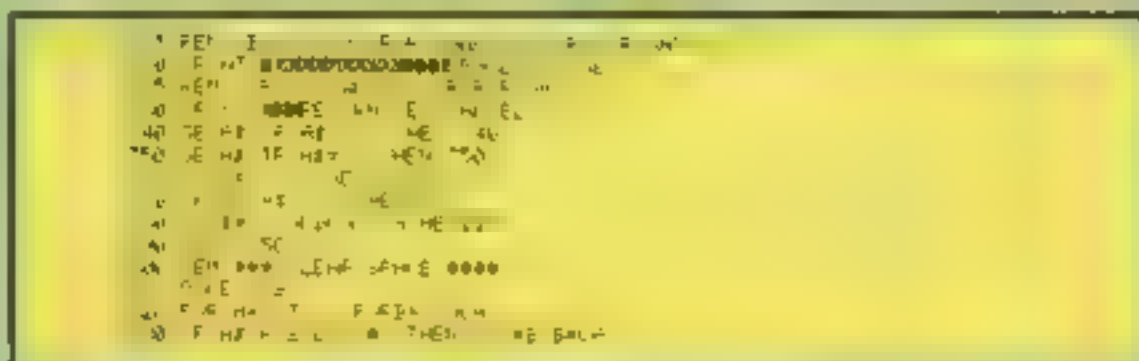
How to use the data:

- LOAD the program. Select option 1, READ RECORDS, and insert your chosen data cassette into the recorder, positioned to the correct file with the tape counter. Press RETURN and the computer will read that file into memory
- Now you can amend any part of the file using the menu options
- Option 8 will display cassette numbers, artists and album names from 1 to X (the number depends on your computer's memory)
- Option 5, SEARCH FOR TITLE. Enter the track or album name and the computer will find it and display the cassette number and side. It will ask if the match is correct and, if not, continue the search. If you enter a single letter it will search for a title beginning with that letter
- Option 7 will display any available space on your data cassette

As usual, the control characters used in Commodore's BASIC, are explained in REMARKS above the lines in which they appear. These REMS should not be entered.

To SAVE the program to tape, type RUN 2420 while in command mode only.

Note: lines between 7 and 80, which named the author etc, have been removed to save space.



VIC-20 PROGRAM

```

140 REM PRINT "SET OF THE HELLO"
150 PRINT "HELLO"
160 REM "HELLO"
170 REM "HELLO"
180 REM "HELLO"
190 REM "HELLO"
200 REM "HELLO"
210 REM "HELLO"
220 REM "HELLO"
230 REM "HELLO"
240 REM "HELLO"
250 REM "HELLO"
260 REM "HELLO"
270 REM "HELLO"
280 REM "HELLO"
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MICRO TIP ORIC

Horizontal thinking

I have discovered that if you add a semicolon to the end of line 20 of the program on page 26 of the Oric manual, the Oric will print the numbers 1 to 1,000 horizontally instead of vertically. Or try this one:

```

5 C=5
10 FOR I=1 TO 40
20 PRINT "HELLO"
30 NEXT I

```

If you add a comma to the end of line 20, the columns of hellos are printed diagonally across the screen from left to right, with four spaces between the words.

Two commas give six spaces. Three commas give 10 spaces, and the hellos appear from right to left.

Four commas give 12 spaces. If you print a six letter word, it appears in two columns vertically. Five commas give 16 spaces.

If you put a semi-colon instead of a comma at the end of line 20, the Oric will print your word horizontally with only one space between each hello.

Finally, if you adjust the number of repetitions in line 10, the Oric will print a single line of hellos across the screen.

John Pearson

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Now get out of these...

A page for adventure addicts. Here's what our reviewers thought of five new releases

Ghost Town 48K £5.95

Virgin Games, 61-63 Portobello Road, London W11 3DD

Ghost Town is an adventure game set in and around a desolate old mining town and the parched Californian desert.

The gold rush is over, but there's a forgotten gold mine out there somewhere. The object is to find that hidden gold and make your way back to the town square with the loot (I would have thought the nearest saloon more appropriate). You have to piece together the clues to find El Dorado. First you need the map — that's quite easy, but the rest of the clues will really have you scratching your head. I won't spoil things, but let's just say that

there are surprises a 'plenty in store.

Ghost Town is well thought out. The screen display creates the right sort of atmosphere and is cleverly designed. The program will accept instructions from the adventure in three forms: as two-word sentences, as single words or as single letter abbreviations. Your commands are not limited by the program's extensive vocabulary.

The instructions provided are perfectly adequate but if anything, the cassette presentation is a bit over the top. Hitherto I haven't been an avid adventurer, but this game had me enthralled.

★★★★★

C.C.	80%
instructions	90%
playability	80%
graphics	90%
value for money	90%

Space Island 48K £6.95

Terminal Software, 28 Church Lane, Prestwich, Manchester M25 5AJ

Your objective in this real time adventure is to find the lost control tape and load it into the hidden timespreader, on the planet Zyro.

You have control of one android, whose location is shown on the screen, while points of interest are represented as dots. Most of the locations are different for each game. The robot only has a limited energy so you must eat, drink and sleep when you have the opportunity. The game's limitations are shown by its vocabulary — a mere 19 commands, entered by single letter codes. Movement is by cursor keys. No hints are given, although you could cheat by

listing the program. There are some large areas on the screen with no interesting locations to travel through. When you do reach a point of interest there is a noticeable pause before the required information is printed — the penalty of writing in BASIC. There is also a fair wait for a new game to be generated. There is a bug in the program so far it has stopped twice with an error message. It is amazing that this has escaped Terminal's attention because it occurs early on in the game.

Space Island is easier than most other Spectrum adventures, so if you only want a single adventure it represents a fair buy — if the bug is sorted out.

★★★

S.E.	80%
instructions	50%
playability	50%
graphics	50%
value for money	35%

Land of Sagan 48K £6.95

Mikro-Ges, 24 Agar Crescent, Bracknell, Berks

I would describe this game as a totally graphic adventure game, as opposed to a text or text graphic game. By that I mean that you move a figure, supposedly you, about the screen, upon which is printed the scenario for the game.

The only test is a sort of situation report, a sitrep we called it in the army. For instance, you will be informed that you have met, or surprised, an enemy. You may then be given the option to fight or run.

Throughout your wanderings you may chance upon treasure or various objects whereupon a message appears on the screen to let you know and periodically you

are brought up to date with your situation. After being wounded you can make your way to the "stream" which meanders across the screen from east to west, or maybe it's west to east. Whatever, the stream heals all wounds.

In spite of my description, the game does go. It represents the quality of games that are capable of being produced for the Spectrum. The graphics movement has obviously been produced by a BASIC program, so slow and jerky they reminded me very much of very early ZX81 games.

After a very determined effort on my part, I found the game dull and uninteresting.

★★★

B.H.	60%
instructions	40%
playability	40%
graphics	40%
value for money	30%

Pitfall 48K £6.95

Infinite, 71 Alcester Road, Moseley, Birmingham

One of the main disadvantages of all the adventure games I've seen so far is that you need to be good at spelling and reading to enjoy them. This cuts out younger users. Here's an adventure which deals with the problem.

The game commands are entered with a single key, the screens are illustrated in a colourful, if idiosyncratic, way and the reading is simple.

It is set in a complex of stairs, caves, rooms and passages. You start at the twentieth level below ground and gathering treasures, spell power and strength as you go, so climb to ground level. So far so good.

You will, however, encounter problems in the shape of more than 100 different rats, mummies, dwarves etc. Ah to mention terra bats! These delightful furry fiends live on the surface and just when you think you're beginning to win they leap upon you, stealing your treasure and sending you back to level 20. Such is life!

I don't think adventure addicts will find anything new here but if you find them too hard, or boring or if you're new to adventuring you may well enjoy this.

D.M.

instructions	100%
playability	100%
graphics	60%
value for money	85%

★★★★★

Urban Upstart 48K £6.50

Richard Shepherd, Elm House 23 25 Elmshott Lane Crippenham, Slough, Berks

This is very different the world's first seedy software! An illustrated adventure Urban Upstart is set in Scarthorpe, "the sort of town where even the dogs carry flick-knives!" You have to find your way out of this menacing urban jungle.

You start at 3am, in a house on Crime Street opposite Arthur's Bookstore, just south of Cut Throat Alley! Get the picture? Every twist and turn leads you into a wasteland of decay and ever more sordid scenarios.

In common with the best adventures, this has a subtle thread of humour running through it. The first time I played

it, I was astounded to find myself arrested for indecent exposure. While languishing in jail, I had time to work out why. Earlier I had found a pair of dungarees, taken them, gone on to Grime Street and discovered an umbrella. Having failed to don the trousers, I bent down to pick up the broly and whoops!

Locations are quickly drawn, the illustrations are good. You have the usual "fun" trying to work out the vocabulary, but don't input any naughty words or the police will swoop, even if you happen to be in hospital.

Great fun and highly recommended, but don't forget your trousers!

D.M.	100%
instructions	90%
playability	100%
graphics	85%
value for money	85%

★★★★★

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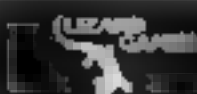
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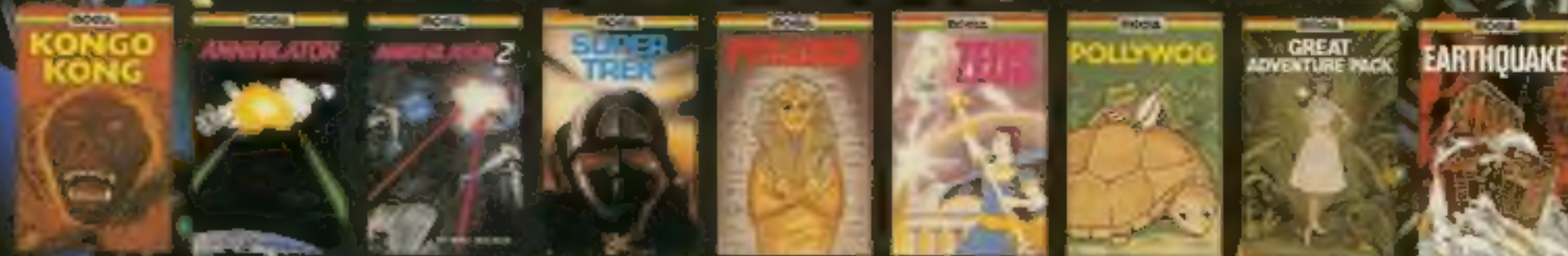
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